JNP GROUP

CONSULTING ENGINEERS

Phase II Geo-environmental Report

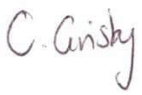
Project: 83 – 89 Manor Way,
Ruislip

Client: John Gladwin

Reference: M45391-JNP-XX-XX-RP-G-1002 P03

Date: April 2026

DOCUMENT CONTROL SHEET



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FOR AND ON BEHALF OF JNP GROUP

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P01	April 2026	First Issue	CG	RB	HI
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P03	April 2026	Minot amendment	HI	HI	HI

Contents

EXECUTIVE SUMMARY

Site location	83-89 Manor Way, Ruislip, HA4 8HW
Development scheme	Erection of a single bungalow with garden area, access road and parking.
NGR	509929, 187405
Geology (from GI)	Made Ground – including concrete hardstanding or made ground topsoil **Granular and cohesive Lambeth Group**
Groundwater	No groundwater was encountered.
Foundation design	Traditional foundations recommended at a minimum depth of 1.50 m. Tree influence for soils with high volume change potential should be considered. Design sulphate class DS-2 and ACEC class AC-2 is required for buried concrete with the soils encountered on this site.
Contamination	**No Risk** to human health or controlled waters. Whilst asbestos was recorded this is of a low quantification (<0.001%) and is located in areas of proposed hardstanding/building and as such there is no viable source-pathway-receptor for end users. However, a watching brief is recommended during site clearance works / foundation excavation for asbestos contamination and any unanticipated areas of contamination.
Ground gas	Deep made ground was not identified on site and as such no significant source of gas is present on site. Therefore, no gas monitoring was required.
Recommendations	During building demolition and construction works, where asbestos is suspected a suitably licensed contractor will be consulted and best practice methodologies followed. This report is submitted to the Regulatory Authorities.

1 INTRODUCTION

1.1 General

1.1.1 JNP Group was instructed by FirstPlan on behalf of John Gladwin to undertake a Phase II Ground Investigation of:

Land Rear of 83-89 Manor Way
Ruislip
HA4 8HW

hereinafter referred to as 'the site'. This report is subject to the limitations presented in **Appendix A**.

1.1.2 It is understood that the existing buildings are to be demolished, and the site redeveloped with a bungalow and roof conversion for an additional bedroom, with hardstanding for access and parking, and amenity green space. The proposed redevelopment layout is shown on external Drawing Reference FLU.1278.01 Rev K, dated 24/08/2020 produced by Fluent Architectural Design Services (**Appendix B**).

1.1.3 All comments given are based on the understanding that the proposed redevelopment will be as detailed above.

1.2 Objectives

1.2.1 The purpose of the investigation was to determine the geotechnical and/or geo-environmental ground conditions at the site and assess the implications of such relative to the proposed residential redevelopment. The scope of work comprised intrusive investigation and laboratory testing. This report contains details of the site, the work and laboratory testing undertaken, strata encountered, geotechnical and chemical laboratory test results, and provides an interpretative assessment of the ground conditions with regard to geotechnical and contaminated land issues.

1.3 Methodology

1.3.1 This report has been compiled in accordance with the on-line Land contamination: risk management (LCRM) guidance produced by the Environment Agency (June 2019). This can be found on the UK government website: https://www.gov.uk/guidance/land-contamination-how-to-manage-the-risks.

1.3.2 With regard to geotechnical aspects, reference is also made to the requirements of BS EN 1997, Eurocode 7, Geotechnical Design, and associated standards.

1.3.3 This report should be read in conjunction with the following JNP Group Reports:

- M45391-JNP-XX-XX-RP-G-1001. Phase I Geo-environmental Report, dated February 2026.

2 SITE WORK

2.1 Introduction

2.1.1 The intrusive site work was undertaken by JNP Group on 19th March 2026 and comprised three windowless sampling boreholes.

2.1.2 All site work was completed under the instruction and supervision of JNP Group with the ground investigation procedures and sample descriptions given in the following publications:

- BS 5930 (2015). Code of Practice for Site Investigations;
- BS 10175 (2001+A1:2013+A2:2017). Investigation of potentially contaminated sites - code of practice;
- BS EN ISO 14688-1. "Soil - Identification and Description;
- BS EN ISO 14688-2. Soil - Classification principles and quantification of descriptive characteristics;
- BS 18400-104:2018. Soil Quality – Sampling. Part 104: Strategies;
- BS 18400-202:2018. Soil Quality – Sampling. Part 202: Preliminary Investigations;
- BS 18400-203: 2018. Soil Quality – Sampling. Part 203: Investigation of potentially contaminated sites;
- BS 18400-205: 2018. Soil Quality – Sampling. Part 205: Guidance on the procedure for investigation of natural, near natural and cultivated sites;

2.1.3 For sites affected by asbestos impacted soils, the guidance given in the following publications has been followed:

- Industry Guidance on Interpretation for Managing & Working with Asbestos in Soil and Construction and Demolition Materials (CL:AIRE 2016);
- Asbestos in Soil and made ground: a guide to understanding and managing risks (CIRIA C733 2014).

2.1.4 Photographs of the investigation are included in **Appendix C**. The locations of the exploratory holes are shown on JNP Group Drawing No. M45391-JNP-XX-XX-DR-G-2000 P01. The exploratory hole records including strata and groundwater encountered, in-situ testing and samples taken are presented in **Appendix D.** The full details of the site work undertaken are summarised in the following sections.

2.1.5 The purpose of the intrusive sitework was to obtain data to discharge planning conditions with respect to land contamination and geotechnical data to inform foundation design.

2.1.6 The site investigation strategy comprised locations considered to be sensitive as part of the development, with the remainder of the positions providing a systemic distribution across the site to suit the proposed redevelopment. The following table shows the rationale for the location of each exploratory hole.

Table 2.1 Exploratory Hole Location Rationale

Exploratory Hole Reference	Rationale
WS01	Target proposed garden area. General site coverage.
WS02 – WS03	General site coverage

2.1.7 The general sampling strategy was to take representative soil samples from the ground to characterise the strata encountered and to provide suitable horizontal distribution, however, where visible contamination was present or suspected, targeted spot samples were taken.

2.2 Windowless Sampling Boreholes

2.2.1 Three windowless sampling boreholes, designated WS01 to WS03 (inclusive) were formed on 19th March 2026, to depths of 2.80 m below ground level (bgl) at various locations across the site. The boreholes were terminated shallower than the target depth of 5.00 m bgl due to SPT refusal.

2.2.2 The windowless sampling technique uses a lightweight tracked rig to advance a borehole by 1.00 m intervals using 1.00 m long steel sampler tubes, at diameters of 100 mm, reducing to 70 mm. The soils are then recovered from each sample tube as continuous core samples, which are logged and sub-sampled on site. Environmental soil samples were generally taken from each made ground material, together with any materials suspected of containing elevated concentrations of contaminants, based on visual and olfactory evidence. The environmental samples comprised a small volatiles jar, and an amber glass jar. Bulk and small plastic tub samples were also taken from selected materials, for laboratory geotechnical testing. In situ Standard Penetration Tests (SPTs) were undertaken in accordance with BS 5930 (2015) at 1.00 m depth intervals in the boreholes in order to obtain in situ strength or relative density parameters for geotechnical design.

2.2.3 All exploratory boreholes commenced with hand excavated trial pits to depths of 1.20 m bgl to mitigate risks of encountering existing underground utilities.

2.2.4 All boreholes were backfilled with arisings and finished with concrete at the surface.

3 LABORATORY TESTING

3.1 Geotechnical

3.1.1 A programme of laboratory testing was scheduled by JNP Group to determine geotechnical properties of selected soil samples obtained from the investigation. The details of the geotechnical testing are summarised below:

Table 3.1 Scheduled Geotechnical Laboratory Tests

Test Description	Number of Tests
Atterberg limits including moisture content	4
Particle size distributions	2
Ground Aggressivity Suite (in accordance with BRE SD1)	6

3.1.2 Tests were undertaken in accordance with BS1377 (1990) "Methods of test for Soils for Civil Engineering purposes". The results of the geotechnical testing are presented in **Appendix E**.

3.2 Environmental

3.2.1 A programme of chemical laboratory testing was scheduled by JNP Group on selected soil samples taken from various depths in the made ground and natural ground recovered from the exploratory holes. Samples of any soils displaying visual or olfactory evidence of contamination were also collected and submitted for laboratory analyses. The samples were placed into suitable containers for the required chemical analyses.

3.2.2 All samples were transported, to i2 Analytical Testing Services which is accredited under UKAS and MCerts. The following table summarises the contaminants scheduled:

Table 3.2 Scheduled Soil Chemical Analyses

Determinant	No
Metals and semi-metals (arsenic, beryllium, boron, cadmium, chromium, copper, lead, mercury, nickel, selenium, vanadium and zinc)	6
Polycyclic Aromatic Hydrocarbons (PAH) 16 USEPA Speciated	6
Total Petroleum Hydrocarbons (TPH) Carbon banded	5
pH	3
Soil Organic Matter (SOM)	3
Asbestos screening	3
Total Organic Carbon (TOC)	3

3.2.3 The results of the laboratory chemical testing are interpreted in Section 7 and are presented in full in **Appendix F**.

4 GROUND AND GROUNDWATER CONDITIONS

4.1 Strata Encountered

4.1.1 The ground conditions encountered during the intrusive investigation were generally consistent with the published geological map. A variable thickness of made ground was found to be underlain by both granular and cohesive Lambeth Group.

4.1.2 A summary of the stratigraphy encountered during the investigation is presented in the following table and described in the following sections, but for full details and descriptions, reference should be made to the exploratory hole records presented in **Appendix D**.

Table 4.1 Stratigraphy Encountered

Stratum	Depth to Top (m bgl)	Depth to Base (m bgl)	Thickness (m)
Made ground (including hardstanding) All exploratory holes	Ground level	0.40 – 0.50	0.40 – 0.50
Lambeth Group All exploratory holes	0.40 – 0.50	Not proven	Not proven

4.2 Made Ground

4.2.1 Concrete hardstanding was encountered in WS01 and WS03 with thicknesses of 0.20 m and 0.09 m bgl. This was underlain by made ground consisting of sandy, clayey gravel or sandy gravelly clay where the gravel fraction comprised tile, concrete and brick.

4.2.2 Made ground topsoil, consisting of dark brown sandy gravelly clay was encountered in WS02 to a depth of 0.45 m bgl where the gravel fraction comprised l tile, asphalt, brick and rebar.

4.3 Lambeth Group

4.3.1 Soils inferred to be of the Lambeth Group were encountered in all exploratory holes underlying the made ground. A maximum proven thickness was encountered in WS03 of 2.40 m.

4.3.2 In general, the soils consisted of soft to very stiff sandy clay or silt to depths of between 2.45 m bgl to 2.60 m bgl overlying very dense sand.

Table 4.2 Lambeth Group – Geotechnical Laboratory Test Results Summary

Property	Number of Tests	Range	Mean	Assessment
Natural Moisture Content	4	19.5 - 34	24	Low to high volume change potential. Low to very high plasticity clays (CL/CV).
% passing 425 sieve	4	98 - 100	99.5	
Liquid Limit %	4	33 - 78	47	
Plastic Limit %	4	15 - 26	19	
Plasticity Index %	4	15 - 52	28	
Modified Plasticity Index %	4	15 - 52	28	
SPT 'N' Values (granular)	3	53 - 71	62	Very dense
SPT 'N' Values (cohesive)	6	5 - 43	20	Soft to very stiff
c_u = 4.5 x SPT 'N' Value (kN/m^2)	6	23 - 194	94	

Property	Number of Tests	Range	Mean	Assessment
Gravel Content %	2	0	0	Slightly clayey SAND
Sand Content %	2	92 - 95	93.5	
Silt / Clay Content %	2	5 - 8	6.5	

4.3.3 The SPT N value / depth profile is presented as Figure 1, the undrained shear strength / depth profile as Figure 2, and a plasticity chart as Figure 3.

4.4 Groundwater

4.4.1 No groundwater was encountered in any of the exploratory holes.

4.5 Ground Contamination and Deleterious Material

4.5.1 No visual or olfactory evidence of contamination was identified on site. Deleterious material comprising of brick, tile, concrete and asphalt was observed in the made ground in all exploratory holes.

4.6 Trees and Tree Roots

4.6.1 A number of mature trees are present along the boundaries of the site. No tree roots or rootlets were encountered in the strata of any of the exploratory holes.

5 HUMAN HEALTH DETAILED QUANTITATIVE RISK ASSESSMENT

5.1 Introduction

5.1.1 Qualitative assessment of risks may be sufficient in many cases to eliminate the possibility of significant pollutant linkages. However, quantitative risk assessment is formally required to determine whether there is a 'significant possibility of significant harm being caused'. Part IIA of the Environmental Protection Act 1990 recommends that 'authoritative and scientifically based guideline values for concentrations of the potential pollutants in or under the land' be used to quantify the risk posed by contamination.

5.1.2 Under the Planning Regime, a quantitative risk assessment can be used to decide whether the site is suitable for the proposed use. In addition, the National Planning Policy Framework (March 2012) also indicates that after remediation, as a minimum land should not be capable of being determined as contaminated land under Part IIA.

5.2 Current UK Screening Values

5.2.1 The UK technical guidance for assessing risks to human health is issued from various UK bodies, including the Environment Agency (EA), DEFRA, Contaminated Land: Applications in Real Environment (CL:AIRE), Chartered Institute of Environmental Health (CIEH), and Land Quality Management (LQM) Ltd (part of the University of Nottingham).

5.2.2 New and updated screening values in the form of provisional Category 4 Screening Levels (C4SL) (published in 2014), and Suitable for Use Levels (S4UL), (published 2015), have been produced by DEFRA and CIEH / LQM respectively using modified versions of the EA's Contaminated Land Exposure Assessment (CLEA) software.

C4SL

5.2.3 Provisional C4SL have been derived by CL:AIRE (project team for DEFRA's SP1010 project) following revised statutory guidance, and as a tool to assist in applying the Part IIA Category 1- 4 classifications to a site. The purpose of the C4SL is to provide a simple test for deciding that land is suitable for use, and definitely not contaminated land under Part IIA. They describe a level of risk that is above minimal, but is still low.

5.2.4 In calculating provisional C4SL some of the exposure modelling scenarios and exposure parameters used in the CLEA software have been modified. These modifications are not discussed further, but reference should be made to the original CL:AIRE / DEFRA publications should further information or clarification be required. A list of the new publications is included in the references section at the end of this report.

5.2.5 To date, fourteen contaminants have been assigned provisional C4SL including arsenic, benzene, benzo[a]pyrene, cadmium, chromium VI, lead, mercury, naphthalene, and some chlorinated solvents for the standard land uses (residential with, and without plant uptake, allotments, commercial, and public open space (parks and residential).

5.2.6 The C4SL are also considered suitable to be used under the planning regime, and DEFRA have confirmed this to all local authorities.

S4UL

5.2.7 The LQM / CIEH S4UL represent generic assessment criteria based on minimal or tolerable risk that are intended to be protective of human health. They have been derived in

accordance with current UK legislation using a modified version of the CLEA software, and are still based on many conservative assumptions. They represent values above which further assessment of the risks or remedial actions may be needed.

5.2.8 S4UL have been derived for a comprehensive list of metals, non–metals, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, chlorinated hydrocarbons, phenolic compounds, explosives, and pesticides, for the standard land uses (residential with, and without plant uptake, allotments, commercial, and public open space (residential and park)).

5.2.9 For details of the exposure parameters and scenarios used to derive the S4UL the reader is reference to the original LQM / CIEH document "The LQM/CIEH S4UL for Human Health Risk Assessment" (2015).

5.2.10 Both sets of screening values can be used to undertake a generic risk assessment by comparing the data directly to the screening value which is considered a conservative approach or statistically to the screening value. Alternatively and if a sufficient dataset is available, a statistical assessment can be undertaken following the guidance given in the joint Chartered Institute of Environmental Health (CIEH) and the Contaminated Land: Applications in Real Environment (CL:AIRE) organisation publication "Guidance On Comparing Soil Contamination Data with a Critical Concentration" (CIEH / CL:AIRE May 2008).

5.3 Petroleum Hydrocarbons

5.3.1 JNP Group have followed the guidance given in the Environment Agency publication 'The UK Approach for Evaluating Human Health Risks from Petroleum Hydrocarbons in Soils' (Environment Agency, 2005). LQM S4UL values have been published based on carbon banded hydrocarbons with aliphatic and aromatic split, corresponding to the TPH CWG bands. JNP Group undertook carbon banded analysis using wider bands than used by TPH CWG without aliphatic and aromatic split.

5.3.2 JNP Group have compared the results of carbon-banded hydrocarbon analysis with the most sensitive LQM S4UL value within the band under scrutiny. Generally, the most sensitive band comprises the lightest aromatic fraction within the carbon band under scrutiny.

5.3.3 The Society of Brownfield Risk Assessment (SoBRA) have produced some Generic Assessment Criteria for assessing chronic risks from the inhalation of vapours arising from groundwater (GAC_{gwvap}) for a short list of 66 organic contaminants (SoBRA February 2017). These are designed to a defensible screening criteria to assist in evaluating this exposure pathway. They represent concentrations below which the chronic risks from vapour migration and inhalation can be considered low / tolerable. GAC_{gwvap} have been developed in line with current UK risk assessment guidance, and CLEA v1.07 software was used for residential and commercial land use scenarios.

5.3.4 Further details of the input parameters selected for use to generate the GAC_{gwvap} can be found in the SoBRA report, and have not been reproduced here. However, it should be noted that they have been derived using some conservative assumptions:

- Impacted ground / perched water is beneath the buildings;
- An infinite source term is present;
- There is no biodegradation;
- Groundwater depth is 0.65m below ground;

- Use of a sandy soil type (in line with SR3)

6 CONTROLLED WATERS QUANTITATIVE RISK ASSESSMENT

6.1 Introduction

6.1.1 Risks to controlled waters have been assessed by following the guidance given in the following publications:

- Remedial Targets Methodology. Hydrogeological Risk Assessment for Land Contamination. EA. 2006;
- Petroleum Hydrocarbons in Water. CL:AIRE .2017;
- BS 15175:2018. Soil Quality – Characterisation of contaminated soil related to groundwater protection. 2018.

6.1.2 This guidance presents a recommended methodology for deriving site specific remedial objectives for contaminated soils and / or groundwater to protect the aquatic environment. The methodology is based upon an approach comprising four levels of assessment, as shown in the table below. The more detailed levels of assessment derive a Remedial Target Value (RTV).

Table 6.1 Levels of Assessment

Assessment Level	Soil Source	Groundwater Source
1	Partition into Leachate*	Not applicable, assessment starts at level 2
2	As above, plus attenuation in the unsaturated zone and dilution in the aquifer	Direct comparison with quality standards only
3	As above, plus lateral attenuation in the saturated zone to off-site compliance point	Lateral attenuation in the saturated zone to off-site compliance point

*soil leachate extraction test results used if available and appropriate.

6.1.3 The principal standards used to assess the potential risks to controlled waters are the current UK drinking water standards (UK DWS) and the DEFRA Environmental Quality Standards (EQS) for freshwater, which are derived for the protection of aquatic life (DEFRA. 2014). The EQS for copper, nickel, manganese, and lead are based on bioavailability. The Water Framework Directive UK Technical Advisory Group (TAG) metal bioavailability assessment tool (M-BAT) has been used to convert dissolved concentrations into bioavailable concentrations, for comparison to EQS.

6.1.4 Groundwater samples were not submitted for laboratory analyses, as highly sensitive receptors are not considered to be present. Whilst the site is underlain by productive strata (Secondary-A Aquifer), no groundwater was encountered during the ground investigation. In addition, no mobile contamination has been identified, therefore, there is not a viable source-pathway-receptor linkage with regard to controlled waters.

7 SOIL AND GROUNDWATER ASSESSMENT

7.1 Soil Results

7.1.1 The results of chemical testing of three samples of made ground and three samples of natural soils have been compared with the C4SL and the LQM S4UL values for a 'residential with gardens end use'. These comparisons are summarised in the following tables.

7.1.2 The following determinants were recorded at concentrations less than their respective limits of laboratory detection and hence have not been included in this assessment: mercury and TPH C_6-C_{10} and unlisted PAHs.

7.1.3 Two SOM tests were undertaken on the made ground and natural ground with values of 6.8 % and 0.9 % respectively. An SOM of 6 % is applicable for the made ground and 1 % for the natural ground.

Table 7.1 Comparison of Soil Chemical Test Results with Residential with plant uptake Guideline Values

Determinant	Maximum Measured Concentration		Background Concentration	LQM/CIEH S4UL: Residential with plant uptake (mg/kg)			Number of tests	Number of exceedances
	Made ground	Natural Ground						
Arsenic	13	9.4	<15	37			6	0
Beryllium	1	1.6	-	1.7			6	0
Boron	4.7	2.3	-	290			6	0
Cadmium	0.3	LOD	<1.8	11			6	0
Chromium (trivalent or total)*	30	53	77	910			6	0
Copper	58	18	40	2400			6	0
Lead	110	20	75 - 95	200**			6	0
Nickel	22	43	20	180			6	0
Selenium	LOD	1.4	-	250			6	0
Vanadium	52	75	80	410			6	0
Zinc	260	85	130	3700			6	0
				1%	**2.5%**	**6%**		
Acenaphthylene	0.05	LOD	-	170	420	920	6	0
Acenaphthene	0.18	LOD	-	210	510	1100	6	0
Fluorene	0.16	LOD	-	170	400	860	6	0
Phenanthrene	3.4	LOD	-	95	220	440	6	0
Anthracene	0.74	LOD	-	2400	5400	11000	6	0
Fluoranthene	5.2	LOD	-	280	560	890	6	0
Pyrene	4.3	LOD	-	620	1200	2000	6	0
Benzo(a)anthracene	2.2	LOD	-	7.2	11	13	6	0
Chrysene	2.2	LOD	-	15	22	27	6	0
Benzo(b)fluoranthene	2.7	LOD	-	2.6	3.3	3.7	6	0
Benzo(k)fluoranthene	1.3	LOD	-	77	93	100	6	0
Benzo(a)pyrene	2.3	LOD	-	2.2	2.7	3.0	6	0
Indeno(1,2,3-c,d)pyrene	1.3	LOD	-	27	36	41	6	0
Dibenzo(a,h)anthracene	0.29	LOD	-	0.24	0.28	0.3	6	0
Benzo(g,h,i)perylene	1.4	LOD	-	320	340	350	6	0
TPH C_{10}-C_{25} (TPH aromatic C_{10}-	12	LOD		74	180	380	5	0

Determinant	Maximum Measured Concentration		Background Concentration	LQM/CIEH S4UL: Residential with plant uptake (mg/kg)			Number of tests	Number of exceedances
	Made ground	Natural Ground						
C_{12}***)								
TPH C_{25}-C_{40} (TPH aromatic C_{21}-C_{35}***)	25	LOD		1100	1500	1700	5	0
Asbestos	detected			Detected			3	WS02 0.1 m (chrysotile <0.001%) and WS03 0.30 m (chrysotile <0.001%)

*assumes all chromium on site is in trivalent form
** provisional C4SL
***most sensitive fraction within wider TPH band (specified)

7.2 Interpretation

7.2.1 The analyses recorded no exceedances in any determinants within the made ground and natural ground with the exception of asbestos.

7.2.2 Heavy metal concentrations are all below the selected screening values.

7.2.3 Three samples were submitted for an asbestos screen, and chrysotile was identified in a sample from WS02 at 0.10 m bgl and WS03 at 0.30 m bgl within the made ground. The asbestos was recorded chrysotile loose fibres each with a quantification of <0.001%, which are considered to be very low quantities.

7.2.4 From the proposed development plan (Reference FLU.1278.01 Rev K, dated 24/08/2020 produced by Fluent Architectural Design Services), the above locations will be under hardstanding, however if the ground does get excavated due to foundation excavation/ surface strip then this material would require removal as asbestos impacted waste following the correct duty of care procedures.

7.3 Risk to Controlled Waters

7.3.1 Risks to controlled waters are considered negligible due to the absence of any mobile contamination and the distance of the nearest watercourse being 750 m north of the site.

7.3.2 Although the underlying aquifer is considered sensitive, no mobile contamination has been identified. The recorded metallic concentrations were of the same order of magnitude to the background concentrations and are considered to represent natural conditions and unlikely to pose a significant risk.

7.4 Summary

7.4.1 On the basis of the chemical testing undertaken, JNP Group consider that the concentrations of contaminants with the soil do not pose significant risk to end users human health or controlled waters. Given the low quantification a remediation strategy is not required.

7.4.2 However, a risk remains for construction workers due to the presence of asbestos contamination. If the asbestos soils are excavated as a result of foundation / site strip then it will require removal from site. As such, a watching brief should be put in place to address these issues.

8 REVISED CONCEPTUAL SITE MODEL AND OVERALL ENVIRONMENTAL RISK

8.1 Summary

8.1.1 Following the ground investigation and subsequent assessment undertaken, the conceptual site model and overall environmental risk assessment have been updated as detailed in the following table.

Table 8.1 Updated Conceptual Model and Risk Assessment

Issue	Risk		Justification
HUMAN HEALTH	NONE		No contamination identified and hence is not considered to be of significant concern to end users.
	LOW		A watching brief for asbestos contamination should be in place for construction workers and to address any excavated material.
GROUNDWATER	NONE		No mobile species of metals or hydrocarbons present.
SURFACE WATER	NONE		No mobile species of metals or hydrocarbons present. Nearest surface watercourse is located 750 m north and is not considered at risk due to its distance from site.
PROPERTY & INFRASTRUCTURE	NONE		Highly acidic or mobile hydrocarbons have not been recorded at the site. However, this should be subject to agreement by the water supply provider.
ECOLOGY	NONE		Based on the assumption that there are no sensitive/ protected species on site (subject to any ecological survey undertaken).

9 GEOTECHNICAL ENGINEERING ASSESSMENT

9.1 Proposed Development / Redevelopment

9.1.1 It is understood that the existing buildings are to be demolished, and the site redeveloped with a bungalow with roof conversion for an additional bedroom, hardstanding for access and parking, and amenity green space.

9.2 Summary of Ground and Groundwater Conditions

9.2.1 The ground conditions encountered during the intrusive investigations were generally consistent with the published geological records. In general, a variable thickness of made ground was found to be underlain by both granular and cohesive Lambeth Group.

9.3 Site Preparation and Earthworks

9.3.1 It is assumed that the garages on site will be demolished, the site cleared of stored building materials and concrete hardstanding broken out.

9.4 Shallow Foundations

9.4.1 The made ground deposits are considered unsuitable to support foundation loads due to their poor engineering characteristics, and inherent variability.

9.4.2 Foundation excavations should be taken through all topsoil and made ground deposits, and foundations placed within the stiff to very stiff cohesive Lambeth Group deposits at a minimum founding depth of 1.00 m bgl, based upon soils of high volume change potential. An allowable bearing pressure of 100 kN/m^2 would be available at 1.50 m bgl, based upon standard 0.60 m wide foundations. The allowable bearing capacity includes an overall factor of safety of 3 against bearing capacity failure, whilst ensuring total settlements are maintained at less than 25mm. However, there are several trees, bushes and hedges in and around the site, and the influence of these may be the controlling criteria for determining foundation type and depth.

9.4.3 Where foundations are to be constructed within the influence of existing, felled or proposed trees, they are likely to need deepening, and heave precautions adopted in accordance with National House Building Council (NHBC) Chapter 4.2 ‘Building Near Trees’, based upon soils of high volume change potential. It is recommended that collapsible materials are used between foundations and cohesive soils to reduce heave pressures.

9.4.4 It should be noted that trench fill foundations deeper than 2.50 m would only be acceptable by the NHBC if they were designed by an engineer.

9.4.5 Foundation depths in cohesive soils dictated by tree influence to be greater than 2.50 m bgl will require an engineered solution.

9.5 Ground Floor Slabs

9.5.1 The underlying soils are considered to have high volume change potential and consequently may heave. Therefore, suspended ground floor slabs should be used incorporating suitable underfloor voids, based on the recommendations in NHBC Chapter 4.2, with reference to soils of high volume change potential. Tree influence for soils with high volume change potential should be considered.

9.6 Groundwater and Excavations

9.6.1 All boreholes remained stable during excavation and therefore foundation / service trenches should not undergo collapse or spalling. In addition, groundwater was not encountered during the investigation. Hence, JNP Group does not consider that groundwater inflow or excavation collapse will present practical difficulties during foundation excavation.

9.6.2 Groundwater was not encountered during the site work. However, the groundwater levels may fluctuate due to seasonal or other effects, such as extreme, prolonged meteorological events or periods.

9.6.3 Boreholes carried out as part of this investigation may represent soft spots and conduits/sumps for groundwater or surface water. In excavations, such materials may also be loose and unstable. Unless specifically stated, exploratory hole locations should be regarded as approximate. Consideration should be given to accurate location of such features where it is considered they may impact on the proposed development.

9.7 Pavement Design

California Bearing Ratio

9.7.1 It is assumed that the pavement subgrade/formation would be in near surface soils at an approximate depth of 0.60 m below existing ground levels. If ground levels are to be reduced, the formation level would need to be adjusted accordingly, and the specifying geotechnical engineer informed, so that an assessment of the appropriate soil layer can be made.

9.7.2 The near surface soils comprise variable made ground deposits, which indicates an equilibrium subgrade CBR value of <2.5 % (based upon Table 3.1 in Interim Advice Note 73/06 Rev 1 2009). This subgrade is considered unsuitable support for a pavement foundation and requires improvement. Options for improvement include; replacement of the weak soils with more suitable material, lime treatment, or the inclusion of geosynthetics.

9.7.3 It is recommended that the subgrade CBR value is verified immediately before placement of the pavement capping/subbase to confirm the minimum design CBR value. The design CBR value should not be increased on the basis of these tests. Should testing indicate a subgrade CBR less than the design value, then measures should be taken to improve the subgrade before proceeding with pavement construction.

Frost Susceptibility

Cohesive Soils

9.7.4 Soils with a Plasticity Index of greater than 15% would not generally be frost-susceptible (i.e. susceptible to ice lenses formation in frosty conditions) (Croney and Jacobs, 1967). An average plasticity index of 28 % is applicable across the cohesive soils on site which indicates that the soils are not frost-susceptible.

Granular Soils

9.7.5 Granular soils are considered frost susceptible if the fines content is greater than 10% (TRL RN 29). Gradings undertaken on these soils indicate that the fines content is generally less than 10%, hence, these soils are not considered frost susceptible.

9.8 Ground Aggressivity to Buried Concrete

9.8.1 Chemical analyses of six samples have been undertaken in accordance with BRE SD1 2005: "Concrete in aggressive ground" to determine their concrete classification.

Table 9.1 Concrete Classification Assessment

Strata	Details	Range	Concrete Class
Lambeth Group	Number of Tests	6	DS2 – AC2
	Water Soluble Sulphates (mg/l)	4.2 - 423	
	pH	7.1 – 8.4	
	Total Potential Sulphate %	0.02 – 0.25	

9.8.2 On the basis of the above assessment, and in accordance with BRE SD1 (2005) "Concrete in aggressive ground", a Design Sulphate Class of DS2, with an ACEC of AC-2, would apply for all buried concrete.

10 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

10.1.1 JNP Group has determined through desk-based research, intrusive investigation, laboratory testing, monitoring, and assessment that:

- Ground conditions at the site comprise made ground underlain by cohesive and granular strata of the Lambeth Group.
- A risk to construction workers is present from trace asbestos within the made ground on site. A watching brief should be put in place prior to the commencement of works.
- Traditional shallow strip or pad foundations are considered feasible, placed within the stiff to very stiff cohesive strata of the Lambeth Group. An allowable bearing pressure of 100 kN/m^2 would be available at 1.50 m bgl, based upon standard 0.60 m wide foundations.
- The site is bounded by several mature trees, which would require foundations within influencing distance to be deepened, based upon soils of high volume change potential.

10.2 Recommendations

10.2.1 In line with the guidelines given LCRM and consequent to the ground investigation conclusions; JNP Group recommends that:

- During building demolition and construction works, where asbestos is suspected a suitably licensed contractor will be consulted and best practice methodologies followed. A watching brief should be in place for asbestos and any unexpected contamination.
- A copy of this report is submitted to the Regulatory Authorities for their approval before any further work is undertaken at the site.

10.2.2 In addition, should significant earthworks be required as part of the redevelopment work, JNP Group recommends that the proposed development works are undertaken in accordance with the definition of Waste Code of Practice (DoWCoP); in following this guidance and to ensure materials are managed correctly, a Materials Management Plan will need to be prepared and declared in advance by a Qualified Person, then implemented and documented in a Verification Report. If this process is not undertaken, then following recent changes in Landfill Tax Regulations by HMRC. There is a risk of penalties equating to twice the Landfill Tax being applied to the re-use of material o site. If the proposed works are to be undertaken outside the DoWCoP, there would need to be some of Environmental Permitting or suitable equivalent. The requirements of such are likely to be more onerous and may take longer to be granted.

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FIGURES / DRAWINGS

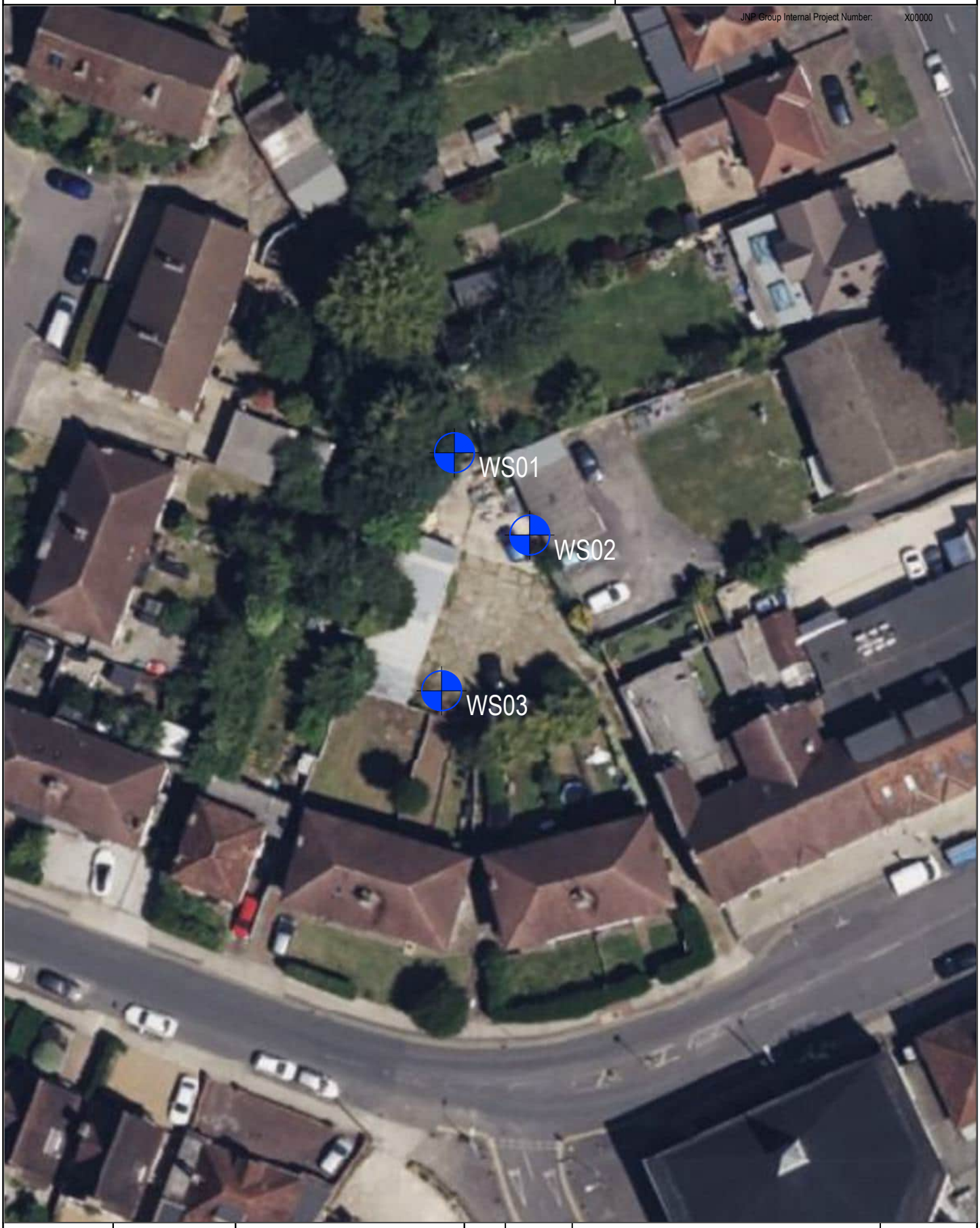
Project - Originator - Volume/System - Level/Location - Type - Discipline - Number	Revision:	Date Issued:
M45391 - JNP - XX - XX - DR - G - 2000	P01	20/03/2026

Job:
Manor Way, Ruislip

Title:
Exploratory Hole Location Plan

JNP GROUP
CONSULTING ENGINEERS
Amersham ● Belfast ● Brighouse ● Bristol
Hartlepool ● Sheffield ● Warwick
www.jnpgroup.co.uk

JNP Group Internal Project Number: X00000



Classification:	Drawn/Checked/Approved:	Status:	Rev.	Date	Description	Drn / Chk'd / App'd
FI_60_20	CG/HI/HI	S2 - Suitable for Information	P01	20/03/2026	First Issue	CG/HI

Figure 1

SPT / Depth Relationship

Project:

Manor Way, Ruislip

Project No:

M45391

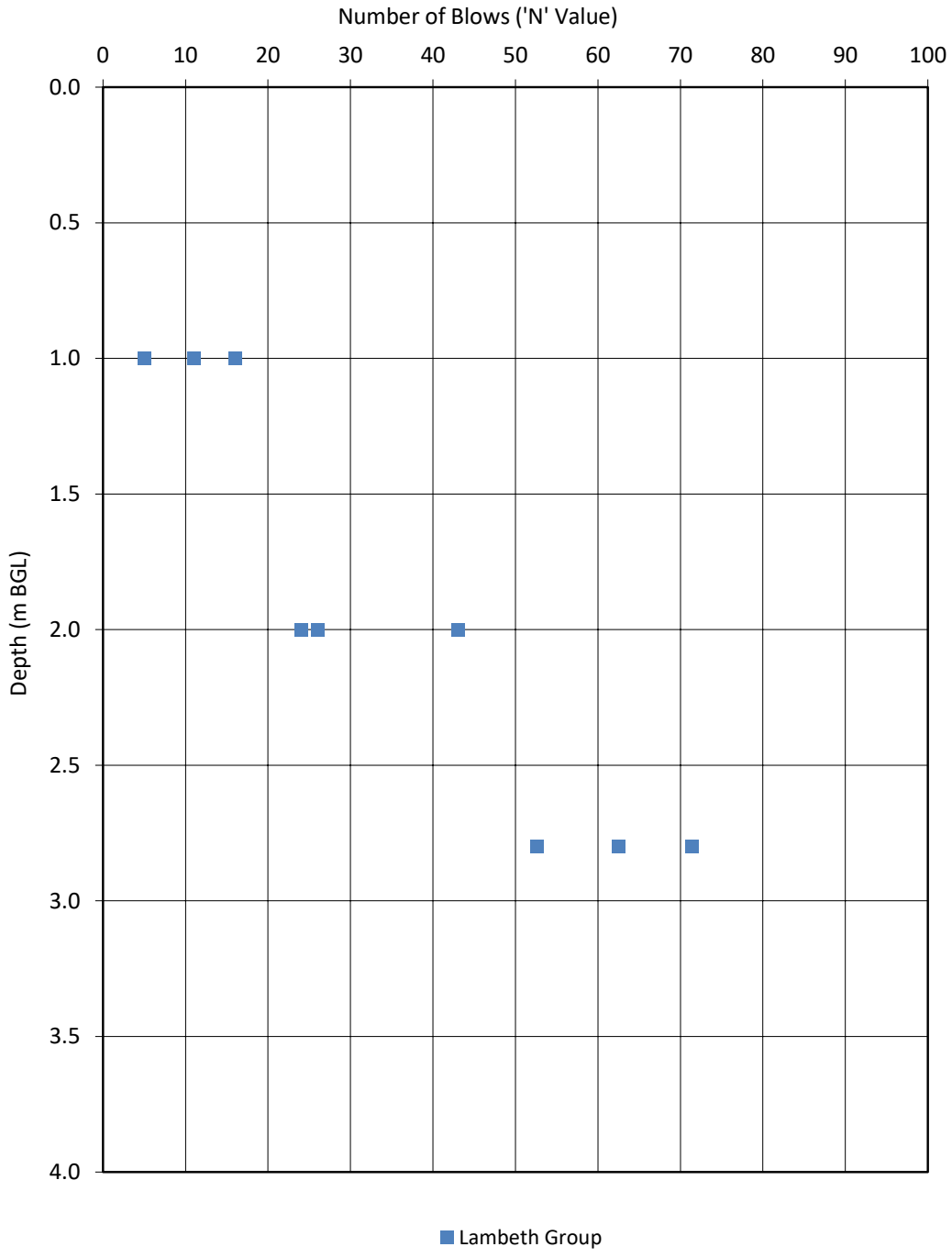


Figure 2

Undrained Shear Strength / Depth Relationship

Project:

Manor Way, Ruislip

Project No:

M45391

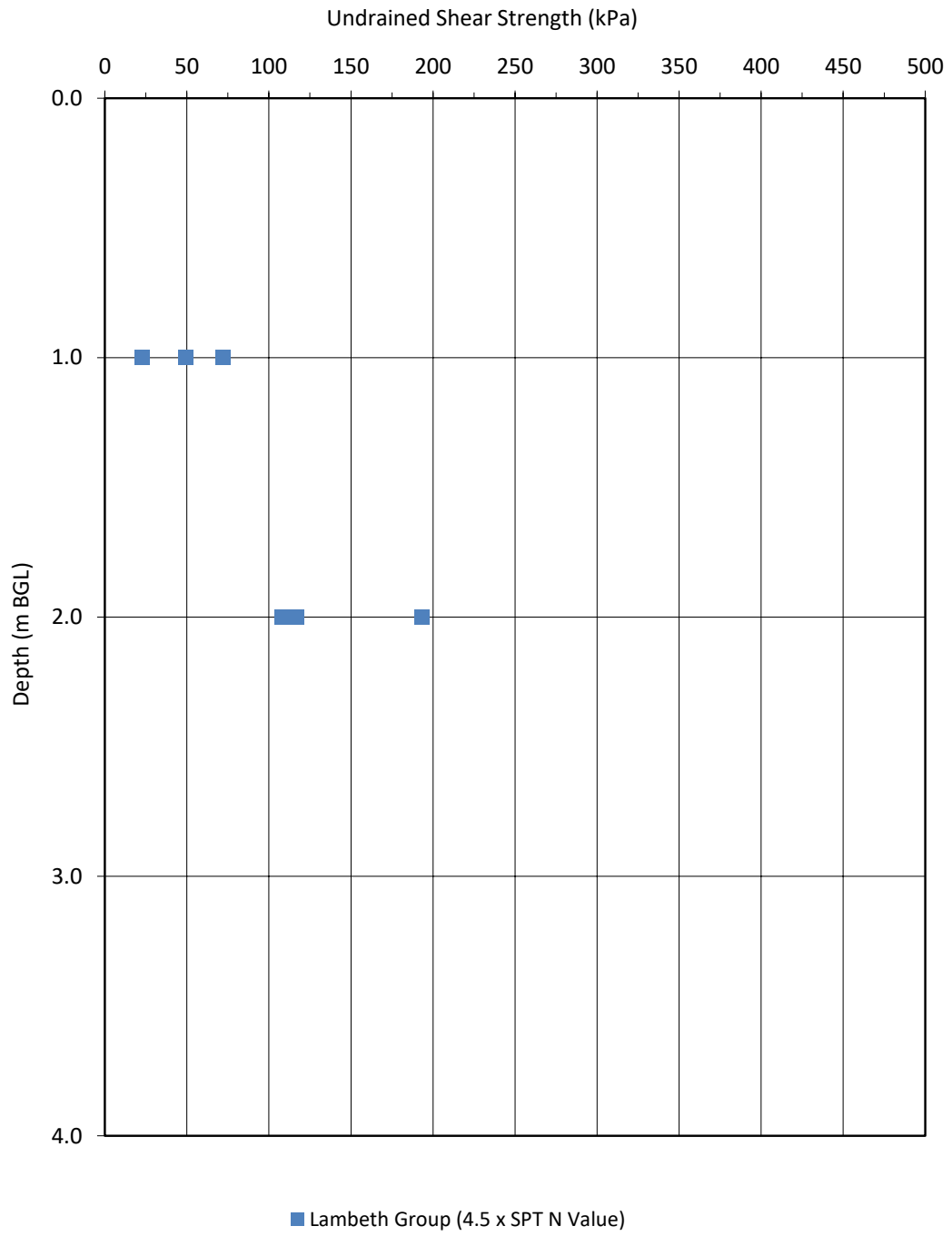


Figure 3

Plasticity Index Chart

Project:

Manor Way, Ruislip

Project No:

M45391

Key:

C Clay M Silt

L Low plasticity
I Intermediate plasticity
H High plasticity
V Very high plasticity
E Extremely high plasticity

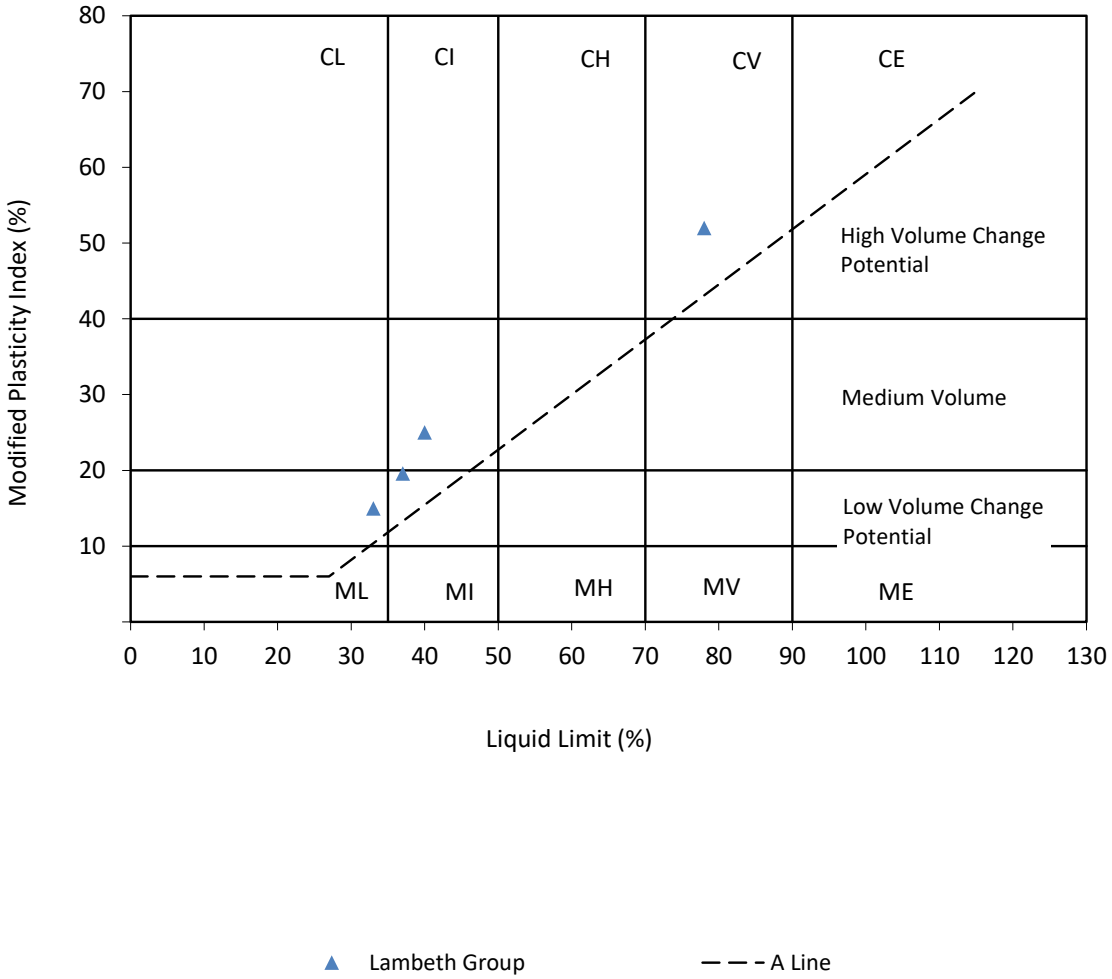


Figure 4 **Moisture Content / Depth Relationship**

Project:

Manor Way, Ruislip

Project No:

M45391

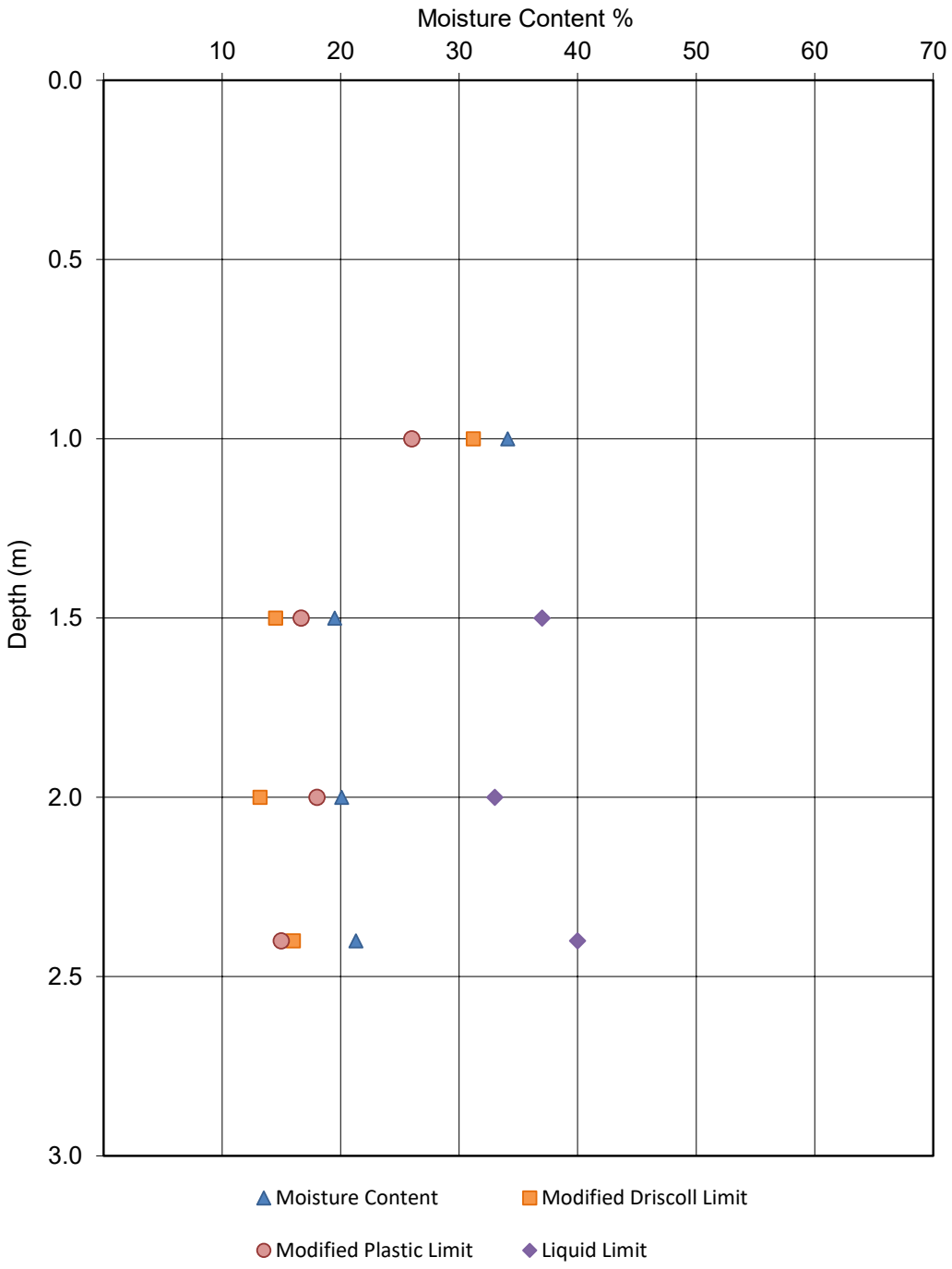


Figure 5

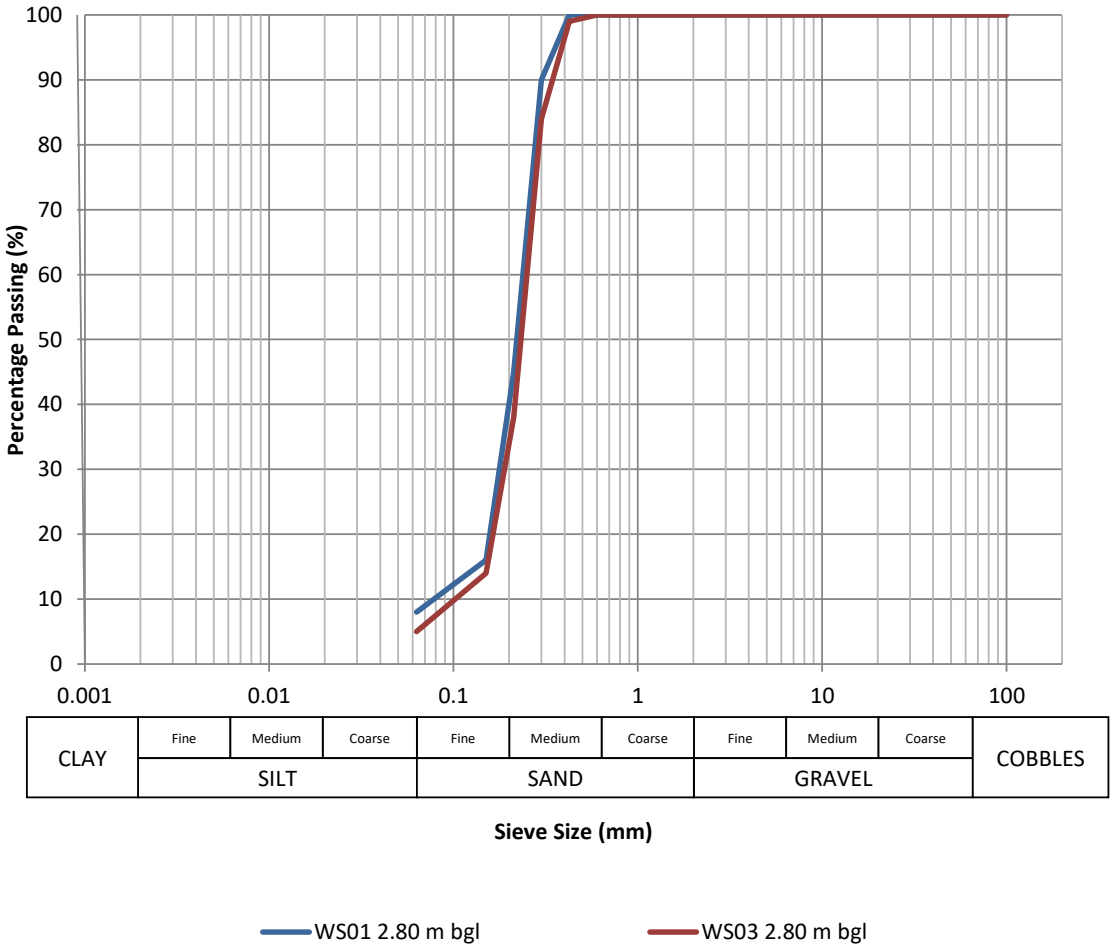
Particle Size Distributions

Project:

Manor Way, Ruislip

Project No:

M45391



APPENDIX A: LIMITATIONS

INTRODUCTION

This report is confidential and has been prepared solely for the benefit of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from JNP Group; a charge may be levied against such approval. JNP Group accepts no responsibility or liability for the consequences of this document being used for any purpose or project other than for which it was commissioned, and: this document to any third party with whom and agreement has not been executed.

Any comments given within this report are based on the understanding that the proposed works to be undertaken will be as described in the introduction and the information referred to and provided by others and will be assumed to be correct and will not have been checked by JNP Group and JNP Group will not accept any liability or responsibility for any inaccuracy in such information.

Any deviation from the recommendations or conclusions contained in this report should be referred to JNP Group in writing for comment and JNP Group reserve the right to reconsider their recommendations and conclusions contained within. JNP Group will not accept any liability or responsibility for any changes or deviations from the recommendations noted in this report without prior consultation and our full approval.

The details contained within this report reflect the site conditions prevailing at the time of investigation. JNP Group warrants the accuracy of this report up to and including that date. Additional information, improved practice or changes in legislation may necessitate this report having to be reviewed in whole or in part after that date. If necessary, this report should be referred back to JNP Group for re-assessment and, if necessary, re-appraisal.

This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report. Whilst this report and the opinion made herein are correct to the best of JNP Group' belief, JNP Group cannot guarantee the accuracy or completeness of any information provided by third parties.

The report represents the finding and opinions of experience geotechnical and geo-environmental engineers. JNP Group does not provide legal advice and the advice of lawyers may also be required.

It should be noted that the following were not included as part of the agreed scope of works with the client: detailed ecological surveys and assessment; groundwater monitoring and sampling.

JNP Group has provided advice and made recommendations based on the findings of the work undertaken, however this is subject to the approval / acceptance by the relevant Regulatory Authorities.

Objectives

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, JNP Group reserves the right to review such information and, if warranted, to modify the opinions accordingly. It should be noted

that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Intrusive Investigations

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made.

Where intrusive investigations have been undertaken, they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature sampling, no investigation technique is capable of identifying all conditions present in all areas. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” of contamination where concentrations may be significantly higher than those actually encountered. The risk assessment and opinions provided, inter alia, take into consideration currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

The objectives of the investigation have been linked to establishing the risks associated with potential human targets, building materials, the environment (including adjacent land), and to surface and ground water. The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to areas unoccupied by the building(s) on the site and by buried services.

Gas and groundwater levels may vary from those reported due to seasonal, or other effects.

Although preliminary comment has have been provided by JNP Group regarding UXO and Invasive Species, JNP Group not experts in these and as such specialist advice should be sought regarding the presence of UXO and invasive species at the site.

Gas Membranes

Where JNP Group are commissioned to undertake the inspection and validation of a gas membrane, we, at the time of inspection, will ensure that the membrane is laid in accordance with the relevant arrangements and sections. At that time we will ensure that the venting media is laid correctly in preparation of the membrane and we will ensure that any tears in the membrane or bad workmanship is reported and instructions given to be rectified. Thereafter it is the duty of the Principal Contractor to ensure that tears and defects are rectified.

Remediation and Verification Reports Limitations

The risk assessment and opinions provided, inter alia, take into consideration currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Where intrusive investigations have been undertaken, they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature sampling, no investigation technique is capable of identifying all conditions present in all areas. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised “hotspots” of contamination where concentrations may be significantly higher than those actually encountered.

If costs have been included in relation to the site remediation these must be confirmed by a qualified quantity surveyor. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The

information reviewed from Third Party should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, JNP Group reserves the right to review such information and, if warranted, to modify the opinions accordingly.

Whilst this report and the opinion made herein are correct to the best of JNP Group's belief, JNP Group cannot guarantee the accuracy or completeness of any information provided by third parties.

Gas and groundwater levels may vary from those reported due to seasonal, or other effects.

APPENDIX B: THIRD PARTY DRAWINGS

Location Plan Scale 1:1250

Existing Site Layout Scale 1:500

Proposed Site Layout Scale 1:500

Rev	Date	Description

FLUENT
ARCHITECTURAL DESIGN SERVICES
69-71 Windmill Road, Sunbury, Middlesex, TW16 7DT
Tel: 0800 0438838
E-mail: info@fluent-ads.co.uk
Web: fluent-ads.co.uk

Rear of 87 Manor Way, Ruislip

Proposed & Existing
Site Layouts & Location Plan

1 : 500 @ A3 0 10

Scale	Dwg No.
1:500 @ A3	FLU.1278.01
Date: 24.08.20	Rev: K
Drawn: N.Millin	

APPENDIX C: PHOTO DOCUMENT

WS01 Arisings 0.00 – 2.80 m bgl	
WS02 Arisings 0.00 – 2.80 m bgl	
WS03 Arisings 0.00 – 2.80 m bgl	

APPENDIX D: EXPLORATORY HOLE RECORDS

Borehole Log

JNP GROUP
CONSULTING ENGINEERS

Borehole No.
WS01
Sheet 1 of 1

Project Name: Manor Way, Ruislip	Project No. M45391	Co-ords: 509926.00 - 187426.00	Hole Type WLS
Location: 83 - 89 Manor Way, Ruislip, HA4 8HW		Level:	Scale 1:50
Client: John Gladwin		Dates: 19/03/2026 - 19/03/2026	Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			CONCRETE MADE GROUND
		0.40	ES		0.50			Grey-brown, sandy, clayey GRAVEL. Gravel so fine to coarse subangular to angular brick, concrete, tile. MADE GROUND
		0.60	ES					
		1.00	D		1.00			Soft brown CLAY LAMBETH GROUP
		1.00		N=16 (1,2/2,3,5,6)				Very stiff brown mottled orange-brown thinly laminated CLAY. LAMBETH GROUP
		2.00	D					
		2.00		N=43 (6,2/10,11,12,10)				
					2.50			Very dense light brown SAND LAMBETH GROUP
		2.80	D		2.80			End of borehole at 2.80 m
		2.80		N=50 (9,11/50 for 240mm)				

Remarks
No groundwater encountered. Refusal at 2.80m bgl. Backfilled with arisings. Service clearance carried out by JNP.

JNP GROUP
CONSULTING ENGINEERS

Borehole Log

Borehole No. **WS02**

Sheet 1 of 1

Project Name: Manor Way, Ruislip	Project No. M45391	Co-ords: 509933.00 - 187417.00	Hole Type WLS
Location: 83 - 89 Manor Way, Ruislip, HA4 8HW		Level:	Scale 1:50
Client: John Gladwin		Dates: 19/03/2026 - 19/03/2026	Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES					Dark brown sandy gravelly CLAY. Gravel is fine to medium subangular brick, quartz, rebar, tile and asphalt.
		0.50	ES		0.45			MADE GROUND TOPSOIL
								Soft grey brown CLAY
		1.00		N=5 (0,1/1,2,1,1)	1.00			LAMBETH GROUP
		1.50	D					Stiff brown slightly sandy CLAY
		2.00		N=26 (3,3/3,4,7,12)				LAMBETH GROUP
		2.40	D		2.45			Very dense light brown SAND.
		2.80		N=50 (9,14/50 for 210mm)	2.80			LAMBETH GROUP
								End of borehole at 2.80 m

Remarks

No groundwater encountered . Refusal at 2.80m bgl. Backfilled with arisings. Service clearance carried out by JNP.

Borehole Log

JNP GROUP
CONSULTING ENGINEERS

Borehole No.
WS03
Sheet 1 of 1

Project Name: Manor Way, Ruislip	Project No. M45391	Co-ords: 509926.00 - 187401.00	Hole Type WLS
Location: 83 - 89 Manor Way, Ruislip, HA4 8HW		Level:	Scale 1:50
Client: John Gladwin		Dates: 19/03/2026 - 19/03/2026	Logged By

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.09			CONCRETE MADE GROUND
		0.30	ES		0.40			Soft grey brown sandy gravelly CLAY. Gravel is fine to coarse concrete and brick. MADE GROUND
		0.60	ES					Soft becoming stiff brown slightly sandy CLAY LAMBETH GROUP
		1.00 1.00	D	N=11 (2,2/2,2,3,4)	1.20			Stiff brown SILT LAMBETH GROUP
		2.00 2.00	D	N=24 (3,6/5,5,7,7)	2.00			Stiff becoming very stiff orange-brown SILT. LAMBETH GROUP
		2.80 2.80	D	N=50 (12,10/50 for 285mm)	2.60 2.80			Very dense light brown SAND LAMBETH GROUP End of borehole at 2.80 m

Remarks
No groundwater encountered. Refusal at 2.8m bgl. Backfilled with arisings. Service clearance carried out by JNP.

JNP GROUP
CONSULTING ENGINEERS

APPENDIX E: GEOTECHNICAL RESULTS

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,cl 5.2 and 6

4041

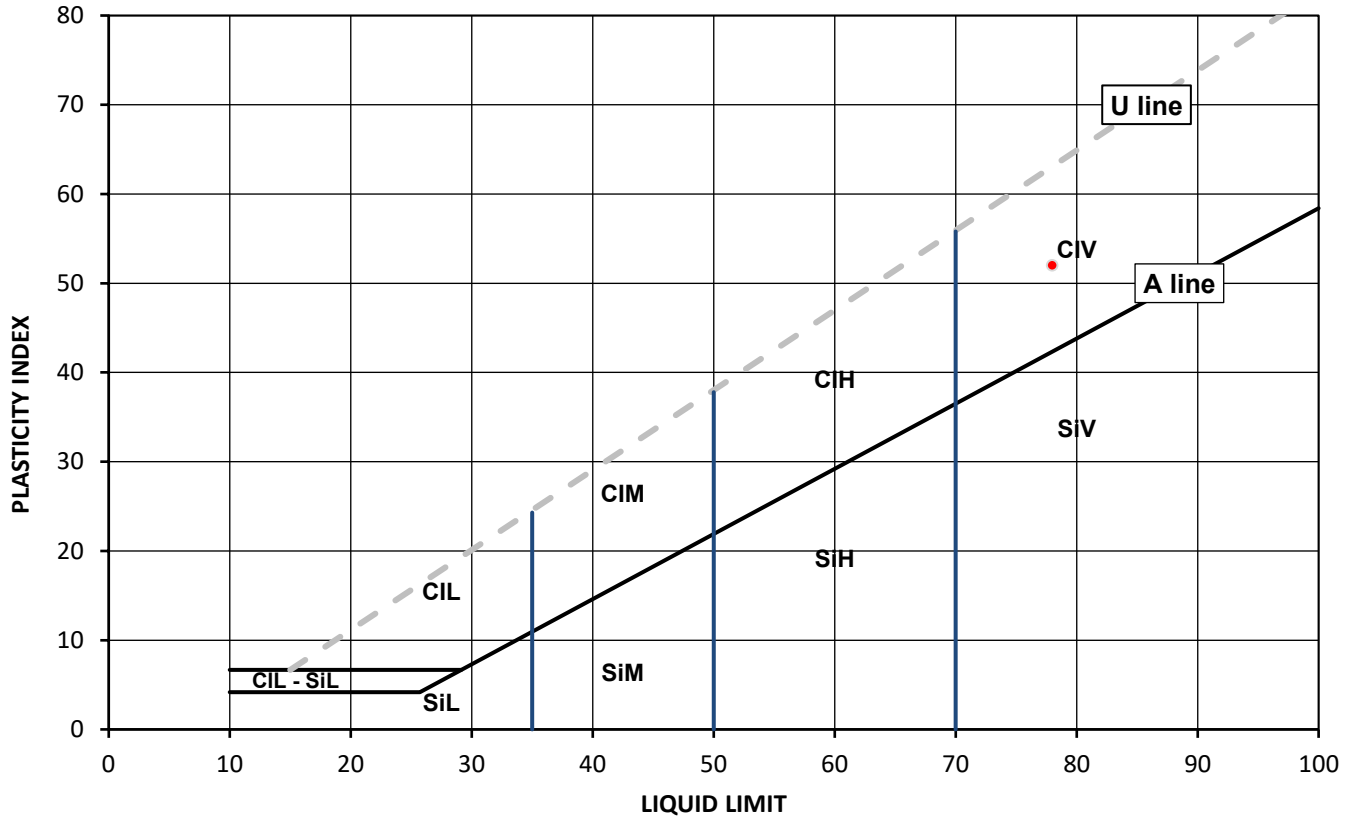
Client:	JNP Midlands LLP	Client Reference:	M45391
Client Address:	Portobello House, Portobello Way, Warwick, CV34 5GJ	Job Number:	26-014896-1
		Date Sampled:	19/03/2026
		Date Received:	20/03/2026
Contact:	Charlotte Grisby	Date Tested:	27/03/2026
Site Address:	Manor Way, Ruislip	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	867119	Depth Top [m]:	1.00
Hole No.:	WS01	Depth Base [m]:	Not Given
Sample Reference:	D1	Sample Type:	D
Sample Description:	Yellowish brown CLAY		
Sample Preparation:	Tested in natural condition; The water content in the sample was increased		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] #	Consistency Index [IC] #	% Passing 425µm BS Test Sieve
34.1	78	26	52	0.16	0.84	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

 Date Reported: 10/04/2026 **GF 337.17**

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,cl 5.2 and 6

4041

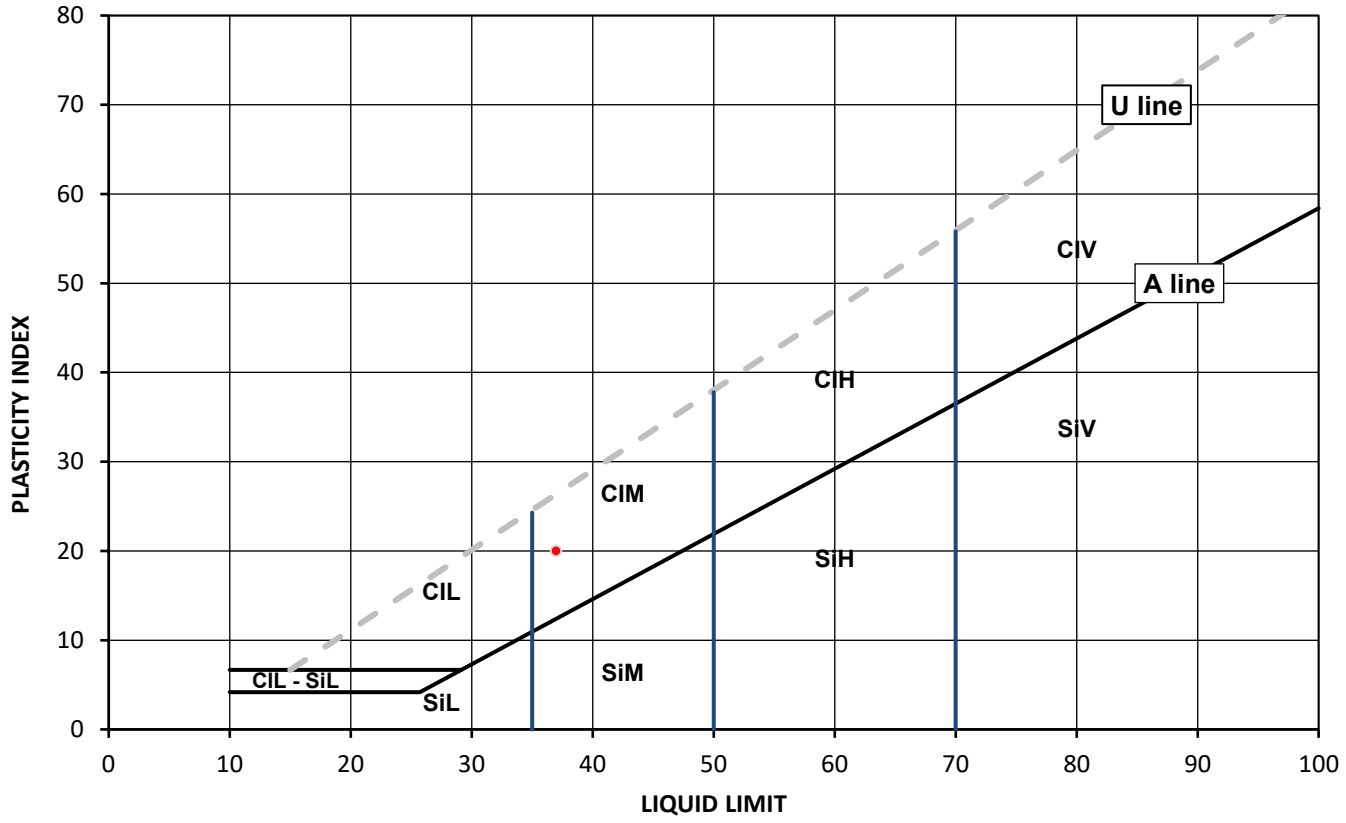
Client:	JNP Midlands LLP	Client Reference:	M45391
Client Address:	Portobello House, Portobello Way, Warwick, CV34 5GJ	Job Number:	26-014896-1
		Date Sampled:	19/03/2026
		Date Received:	20/03/2026
Contact:	Charlotte Grisby	Date Tested:	27/03/2026
Site Address:	Manor Way, Ruislip	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	867121	Depth Top [m]:	1.50
Hole No.:	WS02	Depth Base [m]:	Not Given
Sample Reference:	D1	Sample Type:	D
Sample Description:	Brown slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >0.425mm removed by hand; The water content in the sample was increased		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] #	Consistency Index [IC] #	% Passing 425µm BS Test Sieve
19.5	37	17	20	0.13	0.88	98



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

 Date Reported: 10/04/2026 **GF 337.17**

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,cl 5.2 and 6

4041

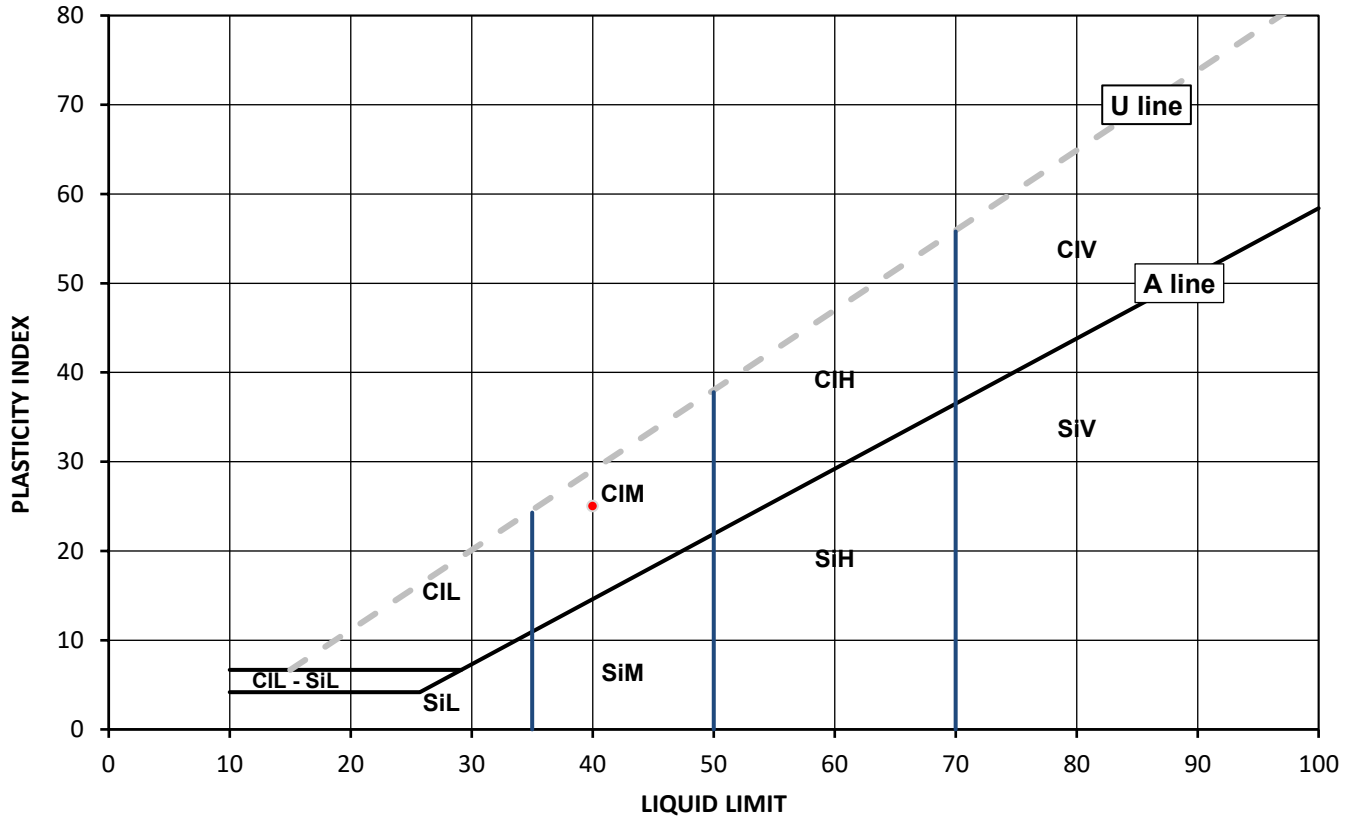
Client:	JNP Midlands LLP	Client Reference:	M45391
Client Address:	Portobello House, Portobello Way, Warwick, CV34 5GJ	Job Number:	26-014896-1
		Date Sampled:	19/03/2026
		Date Received:	20/03/2026
Contact:	Charlotte Grisby	Date Tested:	27/03/2026
Site Address:	Manor Way, Ruislip	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	867122	Depth Top [m]:	2.40
Hole No.:	WS02	Depth Base [m]:	Not Given
Sample Reference:	D2	Sample Type:	D
Sample Description:	Yellowish brown sandy CLAY		
Sample Preparation:	Tested in natural condition; The water content in the sample was increased		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] #	Consistency Index [IC] #	% Passing 425µm BS Test Sieve
21.3	40	15	25	0.25	0.75	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

 Date Reported: 10/04/2026 **GF 337.17**

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS EN ISO 17892-12:2018+A2:2022, cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022,cl 5.2 and 6

4041

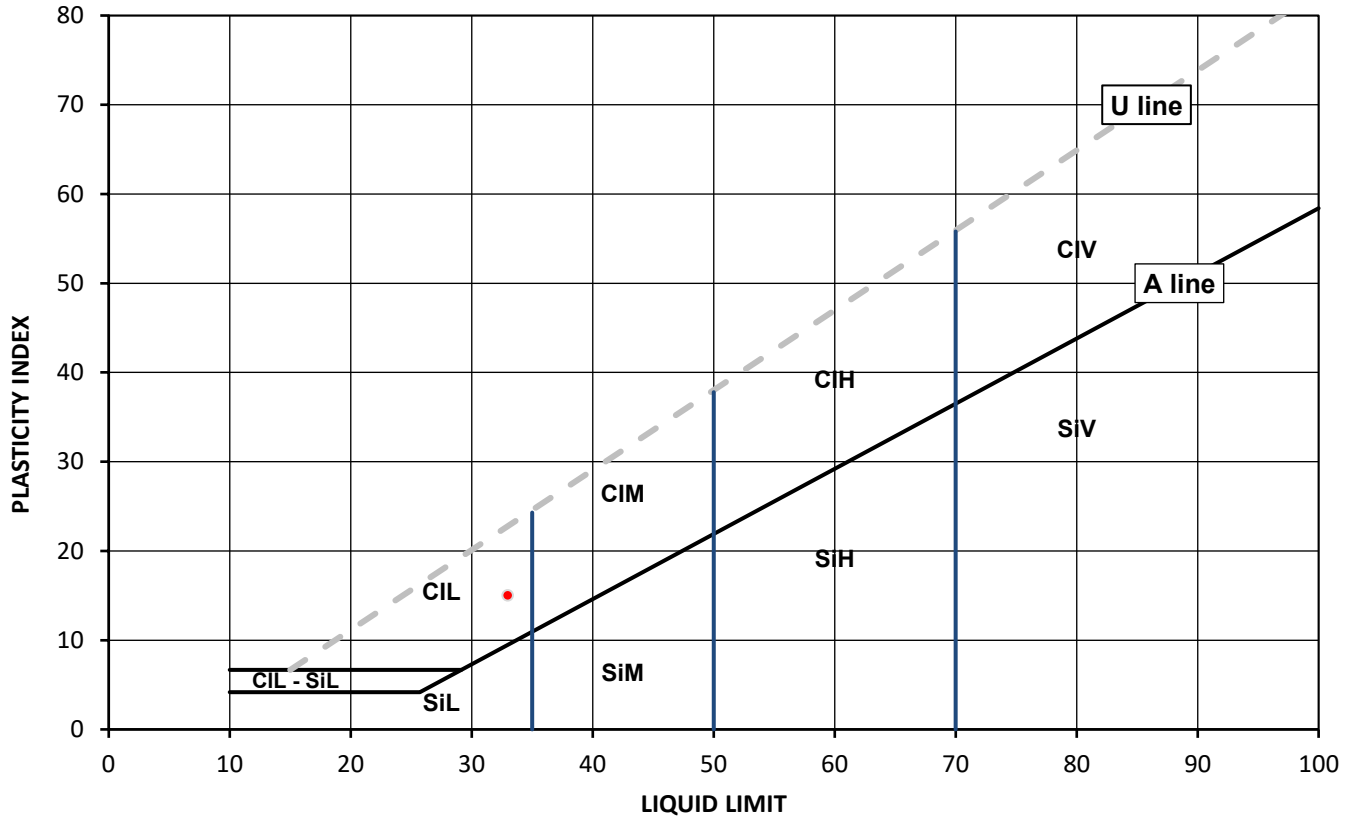
Client:	JNP Midlands LLP	Client Reference:	M45391
Client Address:	Portobello House, Portobello Way, Warwick, CV34 5GJ	Job Number:	26-014896-1
		Date Sampled:	19/03/2026
		Date Received:	20/03/2026
Contact:	Charlotte Grisby	Date Tested:	27/03/2026
Site Address:	Manor Way, Ruislip	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	867123	Depth Top [m]:	2.00
Hole No.:	WS03	Depth Base [m]:	Not Given
Sample Reference:	D2	Sample Type:	D
Sample Description:	Brown very sandy CLAY		
Sample Preparation:	Tested in natural condition; The water content in the sample was increased		
Cone Type:	80g/30deg		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	Liquidity Index [IL] #	Consistency Index [IC] #	% Passing 425µm BS Test Sieve
20.1	33	18	15	0.14	0.86	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS EN ISO 17892-1:2014+A1:2022, BS 1377-2:2022; # Non accredited

Remarks:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 10/04/2026

GF 337.17

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

BS EN ISO 17892-12:2018+A2:2022 cl 5.3 and 5.5, Fall Cone Method, 4 Pt Test, BS 1377-2:2022, cl 5.2 and 6. W by BS EN ISO 17892-1:2014+A1:2022.

4041

Client: JNP Midlands LLP

Client Address: Portobello House, Portobello Way, Warwick, CV34 5GJ

Contact: Charlotte Grisby

Site Address: Manor Way, Ruislip

Client Reference: M45391
Job Number: 26-014896-1
Date Sampled: 19/03/2026
Date Received: 20/03/2026
Date Tested: 27/03/2026
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	W	Liquid & Plastic Limit							Density		
		Reference	Depth Top m	Depth Base m	Type			%	% Passing 425um %	WL* %	Correlation Factor	Wp %	Ip %	Cone type	Sample Preparation	bulk Mg/m3	dry Mg/m3	PD Mg/m3
867119	WS01	D1	1.00	Not Given	D	Yellowish brown CLAY	Atterberg 4 Point	34.1	100	78	-	26	52	80g/30 deg	N / I			
867121	WS02	D1	1.50	Not Given	D	Brown slightly gravelly sandy CLAY	Atterberg 4 Point	19.5	98	37	-	17	20	80g/30 deg	R / I			
867122	WS02	D2	2.40	Not Given	D	Yellowish brown sandy CLAY	Atterberg 4 Point	21.3	100	40	-	15	25	80g/30 deg	N / I			
867123	WS03	D2	2.00	Not Given	D	Brown very sandy CLAY	Atterberg 4 Point	20.1	100	33	-	18	15	80g/30 deg	N / I			

Note: # Non accredited; NP - Non plastic; N - Tested in natural condition, R - Tested after >0,425mm removed by hand, WR - Tested after washing to remove >425mm; I - The water content in the sample was increased , D - The water content in the sample was decreased; * - One point liquid limit corrected as per the report Correlation Factor by Clayton C.R.I and Jukes A.W (1978)

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 10/04/2026 **GF 362.17**

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS EN ISO 17892-1:2014+A1:2022, BS 1377-2: 2022, clause 4.1

4041

Client: JNP Midlands LLP

Client Address: Portobello House, Portobello Way, Warwick, CV34 5GJ

Contact: Charlotte Grisby

Site Address: Manor Way, Ruislip

Client Reference: M45391

Job Number: 26-014896-1

Date Sampled: 19/03/2026

Date Received: 20/03/2026

Date Tested: 27/03/2026

Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC											
		Reference	Depth Top m	Depth Base m	Type			%											
867119	WS01	D1	1.00	Not Given	D	Yellowish brown CLAY		34.1											
867121	WS02	D1	1.50	Not Given	D	Brown slightly gravelly sandy CLAY		19.5											
867122	WS02	D2	2.40	Not Given	D	Yellowish brown sandy CLAY		21.3											
867123	WS03	D2	2.00	Not Given	D	Brown very sandy CLAY		20.1											

Comments:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 10/04/2026

GF 126.20

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS EN ISO 17892-4:2016, BS 1377-2:2022 cl. 10

4041

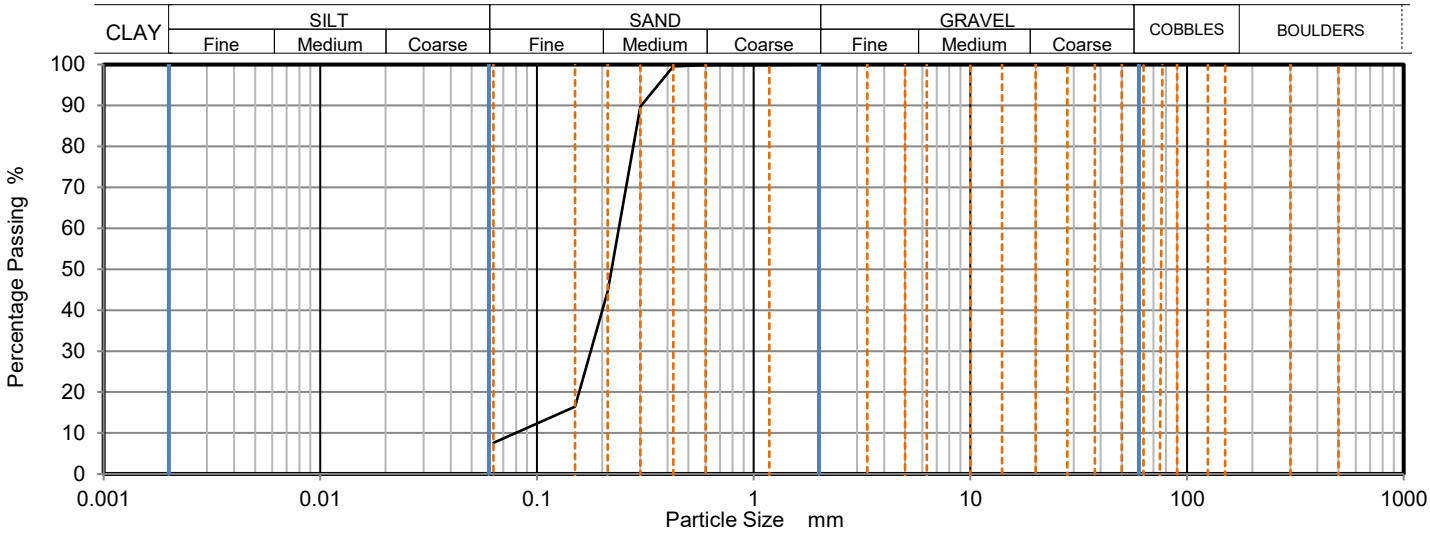
Normec i2 Analytical

Client:	JNP Midlands LLP	Client Reference:	M45391
Client Address:	Portobello House, Portobello Way, Warwick, CV34 5GJ	Job Number:	26-014896-1
		Date Sampled:	19/03/2026
		Date Received:	20/03/2026
Contact:	Charlotte Grisby	Date Tested:	27/03/2026
Site Address:	Manor Way, Ruislip	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	867120	Depth Top [m]:	2.80
Hole No.:	WS01	Depth Base [m]:	Not Given
Sample Reference:	D3	Sample Type:	D
Sample Description:	Light brown clayey SAND		
Sample Preparation:	Sample was whole tested, oven dried at 106.0 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	100		
0.3	90		
0.212	45		
0.15	16		
0.063	8		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	92
Fines <0.063 mm	8

Grading Analysis		
D100	mm	2
D60	mm	0.239
D30	mm	0.177
D10	mm	0.0798
Uniformity Coefficient		3
Curvature Coefficient		1.6

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 10/04/2026

GF 366.13

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS EN ISO 17892-4:2016, BS 1377-2:2022 cl. 10

4041

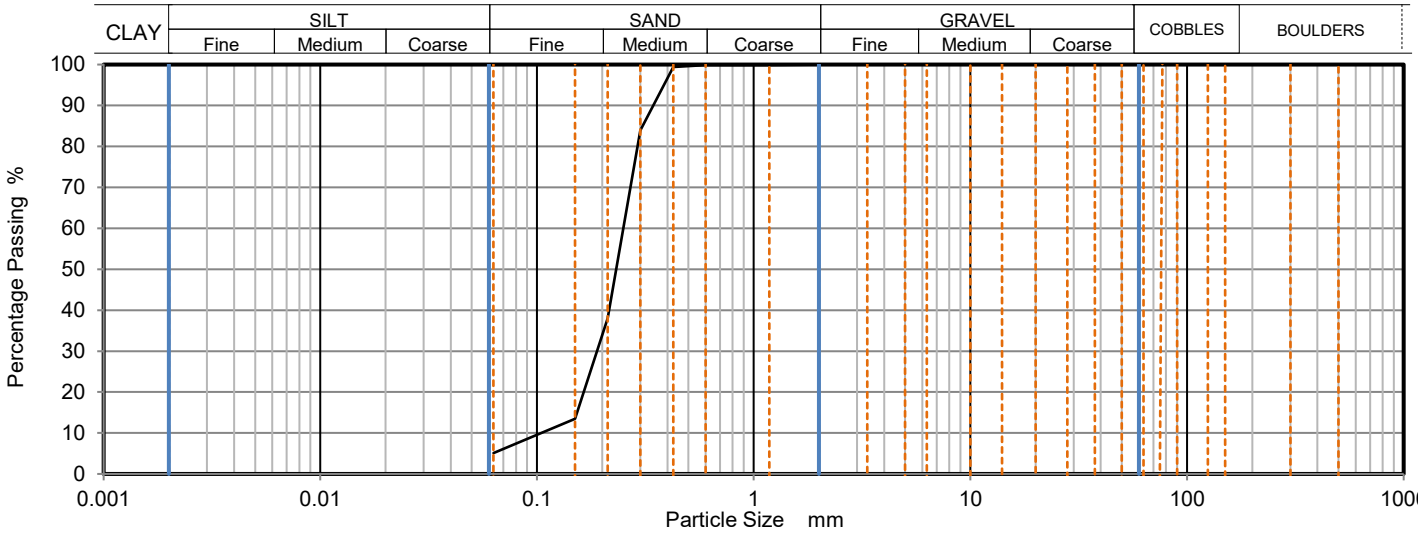
Normec i2 Analytical

Client:	JNP Midlands LLP	Client Reference:	M45391
Client Address:	Portobello House, Portobello Way, Warwick, CV34 5GJ	Job Number:	26-014896-1
		Date Sampled:	19/03/2026
		Date Received:	20/03/2026
Contact:	Charlotte Grisby	Date Tested:	27/03/2026
Site Address:	Manor Way, Ruislip	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	867124	Depth Top [m]:	2.80
Hole No.:	WS03	Depth Base [m]:	Not Given
Sample Reference:	D3	Sample Type:	D
Sample Description:	Light brown slightly clayey SAND		
Sample Preparation:	Sample was whole tested, oven dried at 106.0 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	100		
0.425	99		
0.3	84		
0.212	38		
0.15	14		
0.063	5		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	95
Fines <0.063 mm	5

Grading Analysis		
D100	mm	2
D60	mm	0.25
D30	mm	0.189
D10	mm	0.104
Uniformity Coefficient		2.4
Curvature Coefficient		1.4

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with ISO 17892 -4, by sieving on as received or wet sample

Remarks:

Signed:

Katarzyna Koziel
Geotechnical Reporting Team Leader
for and on behalf of i2 Analytical Ltd

Date Reported: 10/04/2026

GF 366.13

i2 Analytical Ltd, Unit 8, Harrowden Road, Brackmills Industrial Estate, Northampton, NN4 7EB

APPENDIX F: CHEMICAL TEST RESULTS

JNP Midlands LLP
3rd Floor
Marlborough House
48 Holly Walk
Leaminton Spa
CV32 4XP

t:

e: Charlotte.Grisby@jnpgroup.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: info-i2analytical@normecgroup.com

Analytical Report Number : 26-014877

Project / Site name:	Manor Way, Ruislip	**Samples received on:**	20/03/2026
Your job number:	M45391	**Samples instructed on/ Analysis started on:**	20/03/2026
Your order number:	GO4031	**Analysis completed by:**	31/03/2026
Report Issue Number:	1	**Report issued on:**	31/03/2026
Samples Analysed:	6 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

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Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 26-014877
Project / Site name: Manor Way, Ruislip
Your Order No: GO4031

Lab Sample Number				867017	867018	867019	867020	867021
Sample Reference				WS01	WS01	WS02	WS02	WS03
Sample Number				ES1	ES2	ES3	ES4	ES5
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.40	0.60	0.10	0.50	0.30
Date Sampled				19/03/2026	19/03/2026	19/03/2026	19/03/2026	19/03/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Mass of stone >10mm	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	25.9
Moisture Content	%	0.01	NONE	17	25	29	24	15
Total mass of sample received	kg	0.1	NONE	0.8	0.2	0.8	0.4	1
Asbestos								
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	-	Detected	-	Detected
Asbestos Analyst ID	N/A	N/A	N/A	SPU	-	SPU	-	SPU
Analysis completed	N/A	N/A	N/A	31/03/2026	-	31/03/2026	-	31/03/2026
Actinolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	Not-detected
Amosite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	Not-detected
Anthophyllite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	Not-detected
Chrysotile detected	Type	N/A	ISO 17025	-	-	Detected	-	Detected
Crocidolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	Not-detected
Tremolite detected	Type	N/A	ISO 17025	-	-	Not-detected	-	Not-detected
Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-	-	< 0.001	-	< 0.001
Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-	-	Loose Fibres	-	Loose Fibres
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	-	7.8	7.8	-	-
Organic Matter (automated)	%	0.1	MCERTS	-	0.9	6.8	-	-
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	0.9	-	3.9	-	0.9
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.18	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.16	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	3.4	< 0.05	0.11
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.74	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.11	< 0.05	5.2	< 0.05	0.25
Pyrene	mg/kg	0.05	MCERTS	0.1	< 0.05	4.3	< 0.05	0.25
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.07	< 0.05	2.2	< 0.05	0.13
Chrysene	mg/kg	0.05	MCERTS	0.06	< 0.05	2.2	< 0.05	0.16
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.08	< 0.05	2.7	< 0.05	0.25
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	1.3	< 0.05	0.16
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.06	< 0.05	2.3	< 0.05	0.25
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.3	< 0.05	0.16
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	1.4	< 0.05	0.22
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	27.8	< 0.80	1.95

Analytical Report Number: 26-014877
Project / Site name: Manor Way, Ruislip
Your Order No: GO4031

Lab Sample Number				867017	867018	867019	867020	867021
Sample Reference				WS01	WS01	WS02	WS02	WS03
Sample Number				ES1	ES2	ES3	ES4	ES5
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				0.40	0.60	0.10	0.50	0.30
Date Sampled				19/03/2026	19/03/2026	19/03/2026	19/03/2026	19/03/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	9.9	9	13	9.4	9.5
Barium (aqua regia extractable)	mg/kg	1	MCERTS	86	60	120	61	70
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1	1.4	1	1.6	0.8
Boron (water soluble)	mg/kg	0.2	MCERTS	2.2	1.9	4.7	2.3	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	0.3	< 0.2	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	47	25	53	23
Copper (aqua regia extractable)	mg/kg	1	MCERTS	22	14	58	18	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	110	20	110	19	41
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	30	20	43	17
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	1.4	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	52	70	43	75	42
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	200	85	210	80	260
Petroleum Hydrocarbons								
Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	< 1.0	< 1.0	< 1.0	-	< 1.0
TPH (EC10 - EC25) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	10	< 10	12	-	< 10
TPH (EC25 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	13	< 10	25	-	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 26-014877
Project / Site name: Manor Way, Ruislip
Your Order No: GO4031

Lab Sample Number				867022
Sample Reference				WS03
Sample Number				ES6
Water Matrix				N/A
Depth (m)				0.60
Date Sampled				19/03/2026
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Mass of stone >10mm	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	25
Total mass of sample received	kg	0.1	NONE	0.2

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	-
Asbestos Analyst ID	N/A	N/A	N/A	-
Analysis completed	N/A	N/A	N/A	-
Actinolite detected	Type	N/A	ISO 17025	-
Amosite detected	Type	N/A	ISO 17025	-
Anthophyllite detected	Type	N/A	ISO 17025	-
Chrysotile detected	Type	N/A	ISO 17025	-
Crocidolite detected	Type	N/A	ISO 17025	-
Tremolite detected	Type	N/A	ISO 17025	-

Asbestos % by hand picking/weighing	%	0.001	ISO 17025	-

Asbestos Containing Material Types Detected (ACM)	Type	N/A	ISO 17025	-

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.1
Organic Matter (automated)	%	0.1	MCERTS	0.7
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80

Analytical Report Number: 26-014877
Project / Site name: Manor Way, Ruislip
Your Order No: GO4031

Lab Sample Number				867022
Sample Reference				WS03
Sample Number				ES6
Water Matrix				N/A
Depth (m)				0.60
Date Sampled				19/03/2026
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Test Limit of detection**	**Test Accreditation Status**	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	7.7
Barium (aqua regia extractable)	mg/kg	1	MCERTS	55
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.5
Boron (water soluble)	mg/kg	0.2	MCERTS	1.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	44
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	15
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	35
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	62
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	61
Petroleum Hydrocarbons				
Petroleum Range Organics (EC6 - EC10) HS_1D_TOTAL	mg/kg	1	ISO 17025	< 1.0
TPH (EC10 - EC25) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10
TPH (EC25 - EC40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

UKAS TESTING
4041

Normec i2 Analytical

Analytical Report Number: **26-014877**
Project / Site name: **Manor Way, Ruislip**
Your Order No: **GO4031**

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method A006 based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, then fractionation and detailed analysis of each fraction, with quantification by hand picking and weighing.

The limit of detection (reporting limit) of this method is 0.001 %.

The method has been validated using samples of at least 100 g, results for samples smaller than this should be interpreted with caution.

Both Qualitative and Quantitative Analyses are UKAS accredited.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample	Analysis completed	Analyst ID
867019	WS02	0.1	178	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**	31/03/2026	SPU
867021	WS03	0.3	181	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**	31/03/2026	SPU

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Analytical Report Number : 26-014877
Project / Site name: Manor Way, Ruislip

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
867017	WS01	ES1	0.4	Brown clay and sand with gravel
867018	WS01	ES2	0.6	Brown clay and sand
867019	WS02	ES3	0.1	Brown clay and sand with gravel and vegetation
867020	WS02	ES4	0.5	Brown clay and sand
867021	WS03	ES5	0.3	Brown clay and sand with stones
867022	WS03	ES6	0.6	Brown clay and sand

Analytical Report Number : 26-014877
Project / Site name: Manor Way, Ruislip

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content (Wet Weight)	Moisture content (% wet weight), determined gravimetrically (up to 30°C)	In-house-procedure based on BS EN 12880:2000	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES	In-house method based on Second Site Properties version 3	L038B	D	MCERTS
Speciated PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Total petroleum hydrocarbons by GC-FID in soil	Determination of total petroleum hydrocarbons in soil by GC-FID	In-house method	L076B	D	MCERTS
Total petroleum hydrocarbons by HS-GC-MS in soil	Determination of total petroleum hydrocarbons in soil by HS-GC-MS	In-house method	L129-PL	W	ISO 17025
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Asbestos Quantification - Gravimetric	Asbestos quantification by gravimetric method - in house method based on references	HSE Report No: 83/1996, HSG 248 (2021), HSG 264 (2012) & SCA Blue Book (draft)	A006B	D	ISO 17025

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution

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Analytical Report Number : 26-014897

Project / Site name:	Manor Way, Ruislip	**Samples received on:**	20/03/2026
Your job number:	M45391	**Samples instructed on/ Analysis started on:**	20/03/2026
Your order number:	GO4031	**Analysis completed by:**	31/03/2026
Report Issue Number:	1	**Report issued on:**	31/03/2026
Samples Analysed:	6 soil samples		

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting
air	- once the analysis is complete

Excel copies of reports are only valid when accompanied by this PDF certificate.

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 26-014897
Project / Site name: Manor Way, Ruislip
Your Order No: GO4031

Lab Sample Number				867125	867126	867127	867128	867129
Sample Reference				WS01	WS01	WS02	WS02	WS03
Sample Number				D1	D3	D1	D2	D1
Water Matrix				N/A	N/A	N/A	N/A	N/A
Depth (m)				1.00	2.80	1.50	2.40	1.00
Date Sampled				19/03/2026	19/03/2026	19/03/2026	19/03/2026	19/03/2026
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status					
Mass of stone >10mm	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	23	2.5	15	11	24
Total mass of sample received	kg	0.1	NONE	0.1	0.2	0.2	0.2	0.7
General Inorganics								
pH (L099)	pH Units	N/A	MCERTS	7.9	8.4	8.2	8	7.1
Total Sulphate as SO_4	%	0.005	MCERTS	0.015	< 0.005	0.032	0.032	0.116
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	87	8.4	140	210	850
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	43.5	4.19	70.9	106	423
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	10	0.7	1.6	1.3	7
Total Sulphur	mg/kg	50	MCERTS	78	< 50	170	170	830
Total Sulphur	%	0.005	MCERTS	0.008	< 0.005	0.017	0.017	0.083
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate as NO_3 (Water Soluble) (2:1)	mg/kg	0.9	NONE	1.05	< 0.90	7.26	1.91	< 0.90
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	0.9	N/A	< 0.90	< 0.90	3.63	0.96	< 0.90
Heavy Metals / Metalloids								
Magnesium (leachate equivalent)	mg/l	2.5	NONE	5.4	< 2.5	4.6	6.5	14
Magnesium (water soluble)	mg/kg	5	NONE	11	< 5.0	9.3	13	27

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 26-014897
Project / Site name: Manor Way, Ruislip
Your Order No: GO4031

Lab Sample Number	867130
Sample Reference	WS03
Sample Number	D3
Water Matrix	N/A
Depth (m)	2.80
Date Sampled	19/03/2026
Time Taken	None Supplied

Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status	
Mass of stone >10mm	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	3
Total mass of sample received	kg	0.1	NONE	0.3

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.6
Total Sulphate as SO_4	%	0.005	MCERTS	< 0.005
Water Soluble Sulphate as SO_4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	9.2
Water Soluble SO_4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	4.6
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.4
Total Sulphur	mg/kg	50	MCERTS	< 50
Total Sulphur	%	0.005	MCERTS	< 0.005
Ammoniacal Nitrogen as NH_4^+	mg/kg	0.5	MCERTS	< 0.5
Ammonium as NH_4^+ (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05
Nitrate as NO_3 (Water Soluble) (2:1)	mg/kg	0.9	NONE	< 0.90
Water Soluble Nitrate (2:1) as NO_3 (leachate equivalent)	mg/l	0.9	N/A	< 0.90

Heavy Metals / Metalloids

Magnesium (leachate equivalent)	mg/l	2.5	NONE	< 2.5
Magnesium (water soluble)	mg/kg	5	NONE	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 26-014897
Project / Site name: Manor Way, Ruislip

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
867125	WS01	D1	1	Brown clay
867126	WS01	D3	2.8	Brown sand
867127	WS02	D1	1.5	Brown clay and sand
867128	WS02	D2	2.4	Brown sand
867129	WS03	D1	1	Brown clay with vegetation
867130	WS03	D3	2.8	Brown sand

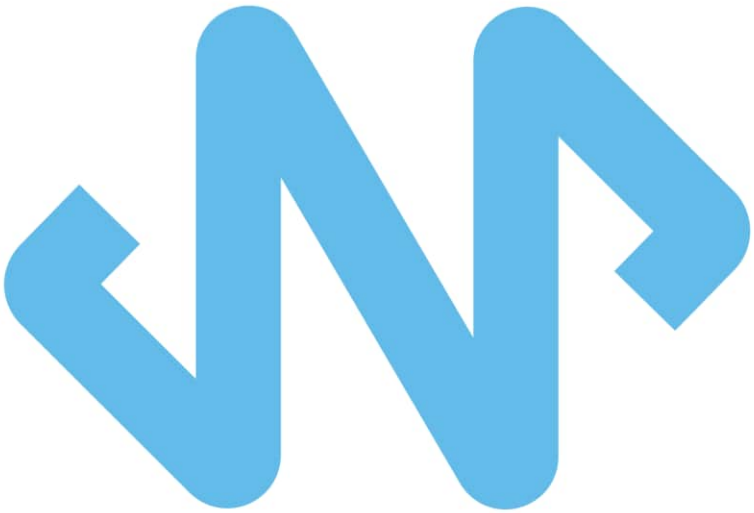
Analytical Report Number : 26-014897
Project / Site name: Manor Way, Ruislip

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI PrW)
Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content (Wet Weight)	Moisture content (% wet weight), determined gravimetrically (up to 30°C)	In-house-procedure based on BS EN 12880:2000	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Magnesium, water soluble, in soil	Determination of water soluble magnesium by extraction with water followed by ICP-OES	In-house method based on TRL 447	L038B	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser	In-house method	L082B	D	MCERTS
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082B	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099-PL	D	MCERTS
Water Soluble Nitrate (2:1) as NO3 in soil	Determination of nitrate as NO3 in soil by discrete method	In-house method by discrete analyzer based on TON as N, Total Oxidized Nitrogen (Vanadium Chloride reduction), Thermo Fisher Scientific, MANUAL 2015-0	L082B	W	NONE
Soil Descriptions	Textural classification	In-house method	L019B	W	NONE

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.
The result for sum should be interpreted with caution



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